

544G, 544G LL, and 544G TC Loaders 624G Loader 644G Loader (Serial No. 557739-)



JOHN DEERE

OPERATORS MANUAL

544G, 544G LL, and 544G TC Loaders 624G Loader
644G Loader (Serial No. 557739-)

OMT159816 Issue G6 English

John Deere Dubuque Works

OMT159816 Issue G6

(Mark old manual OMT154907 L4 for
machines up to Serial No. 557738)

LITHO IN U.S.A.
ENGLISH



Introduction



-UN-08SEP92

T7773CX

READ THIS MANUAL carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your machine may also be available in other languages. (See your John Deere dealer to order.)

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your machine and should remain with the machine when you sell it.

MEASUREMENTS in this manual are given in both metric and customary U.S. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners may require a specific metric or inch wrench.

RIGHT-HAND AND LEFT-HAND sides are determined by facing in the direction of forward travel.

WRITE PRODUCT IDENTIFICATION NUMBERS (P.I.N.) in the Machine Numbers section. Accurately record all the numbers to help in tracing the machine should it be stolen. Your dealer also needs these

numbers when you order parts. File the identification numbers in a secure place off the machine.

WARRANTY is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate which you should have received from your dealer.

This warranty provides you the assurance that John Deere will back its products where defects appear within the warranty period. In some circumstances, John Deere also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

THE TIRE MANUFACTURER'S warranty supplied with your machine may not apply outside the U.S.

CALIFORNIA PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

EMISSIONS CONTROL WARRANTY STATEMENT FOR NEW JOHN DEERE INDUSTRIAL EQUIPMENT (U.S. ONLY)

To determine if the engine in your machine qualifies for the additional warranties set forth below, look for the "Engine Information" label located on your engine. If you reside in the United States and the engine label states: "Engine conforms to US EPA regulations on heavy duty non road diesel cycle engines," you are entitled to the "U.S. Emission Control Warranty Statement." If you reside in California, and the engine label states: "Engine conforms to California regulations on heavy duty non road diesel cycle engines," you are entitled to the "California Emission Control Warranty Statement."

U.S. EMISSIONS CONTROL WARRANTY STATEMENT

Emissions control-related parts and components are warranted by John Deere for five years or 3000 hours of operation, whichever occurs first. John Deere further warrants that the engine covered by this warranty was designed, built, and equipped so as to conform at the time of sale with all U.S. emissions standards at the time of manufacture, and that it is free of defects in materials and workmanship which would cause it not to meet these standards within the period of five years or 3000 hours of operations, whichever occurs first.

Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete machine warranty, less emissions-related parts and components, is provided separately as "John Deere "Secure Warranty" For New Industrial Products."

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board (CARB) and John Deere are pleased to explain the emission control system on your new engine. In California, new heavy-duty engines must be designed, built and equipped to meet the State's stringent anti-smog standards. John Deere must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect, or improper maintenance of your machine.

Your emissions control system includes:

- Fuel Metering System
 - Fuel Injection System
- Air Induction System
 - Intake Manifold
 - Turbocharger System
 - Charge Air Cooling System
- Miscellaneous Items used in Above Systems

Where a warrantable condition exists, i.e. failure due to defect in John Deere-supplied material and/or workmanship, John Deere will repair your heavy-duty engine at no cost to you including diagnosis, parts and labor.

JOHN DEERE'S WARRANTY COVERAGE:

The emission control system of your heavy-duty engine is warranted for five years or 3000 hours of operation, whichever occurs first. If any emission-related part on your engine is defective, the part will be repaired or replaced by John Deere. Warranties stated on this certificate refer only to emissions-related parts and components of your engine. The complete machine warranty, less emissions-related parts and components, is provided separately as the "John Deere "Secure Warranty" For New Industrial Products."

OWNER'S WARRANTY RESPONSIBILITIES:

As the heavy-duty engine owner, you are responsible for the performance of the required maintenance as outlined in the

Operator's Manual. John Deere recommends that you retain all receipts covering maintenance on your heavy-duty engine, but John Deere cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

However, as the heavy-duty engine owner, you should be aware that John Deere may deny you warranty coverage if your heavy-duty engine has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with California's emissions requirements.

You are responsible for initiating the warranty process. The CARB suggests that you present your machine to the nearest authorized John Deere dealer as soon as a problem is suspected. The warranty repairs should be completed by the service dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact John Deere at 1-319-292-5400.

The warranty period begins on the date the machine is delivered to an ultimate purchaser, or when otherwise put into service. John Deere warrants to the ultimate purchaser and each subsequent purchaser that the engine is designed, built and equipped so as to conform with all applicable regulations adopted by the Air Resources Board, and that it is free from defects in materials and workmanship which would cause the failure of a warranted part.

Any warranted part which is scheduled for replacement as required maintenance by the operator's manual is warranted by John Deere for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement point, the part shall be repaired or replaced under the warranty. Any such part repaired or replaced under warranty is warranted for the remainder of the period prior to the first scheduled replacement point for that part.

Any warranted part which is not scheduled for replacement as required maintenance, or which is scheduled only for regular inspection to the effect of repairing or replacing as necessary, is warranted for the warranty period.

Repair or replacement of a warranted part will be performed at no charge to you by an authorized John Deere dealer. You will not be charged for diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed by a John Deere dealer.

John Deere is liable for damages to other engine components caused by failure under warranty of any warranted part.

Any replacement part may be used in the performance of any maintenance or repairs, and such use will not reduce the warranty obligations of John Deere. However, the use of add-on or modified parts are grounds for disallowing a warranty claim.



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T7779CZ



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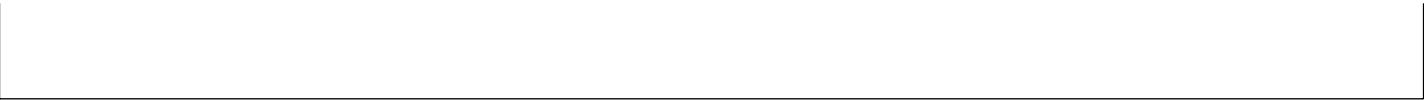
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HELP!!



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A John Deere ILLUSTRATION™ Manual

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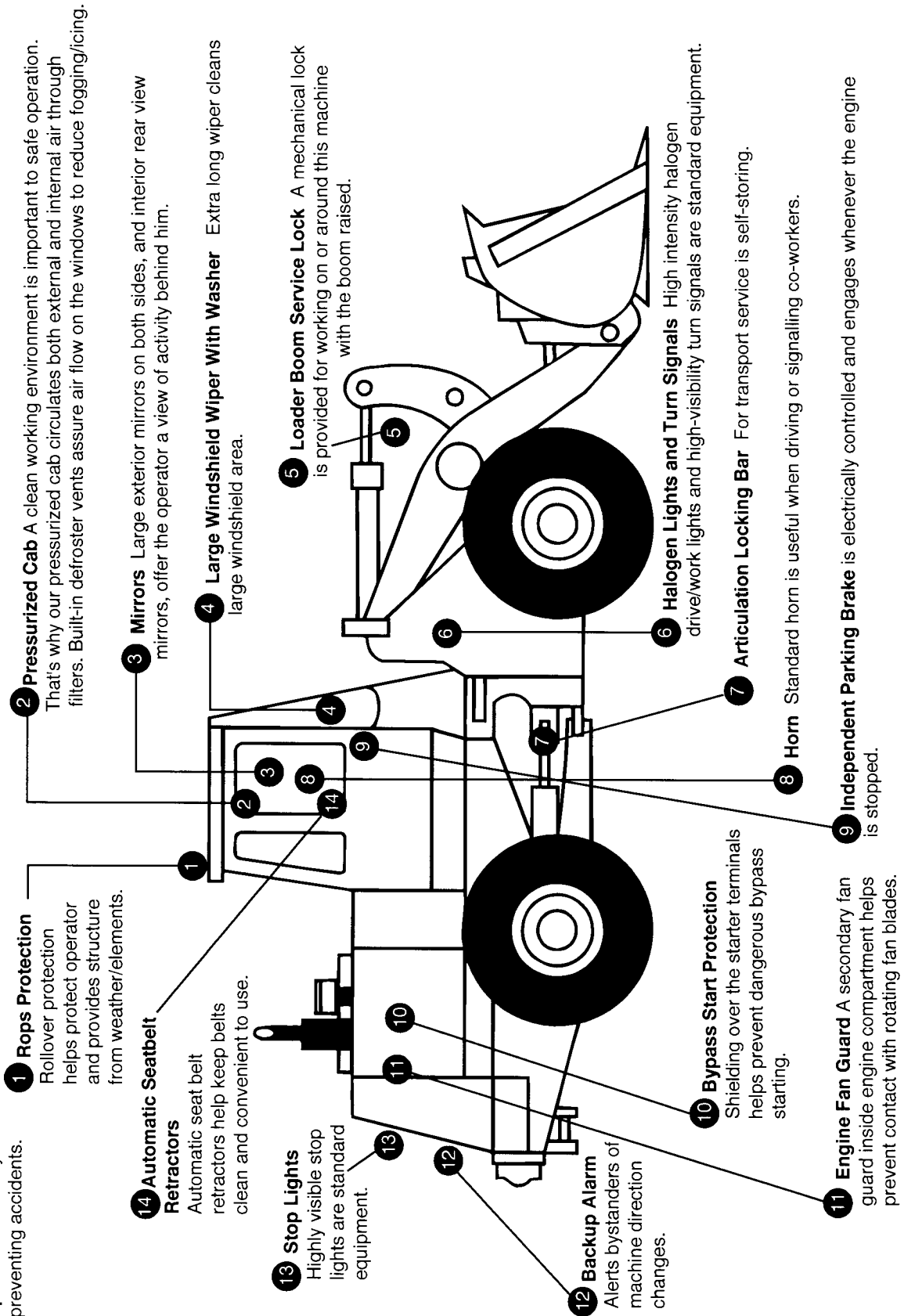
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JOHN DEERE 4WD LOADER SAFETY FEATURES

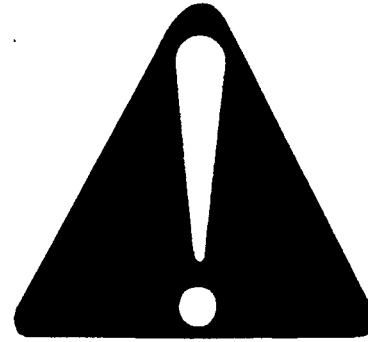
Please remember, the **operator** is the key to preventing accidents.



RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



DX,ALERT -19-03MAR93-1/1

T81389 -UN-07DEC88

UNDERSTAND SIGNAL WORDS

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



DX,SIGNAL -19-03MAR93-1/1

TS187 -19-30SEP88

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.



DX,READ -19-03MAR93-1/1

TS201 -UN-23AUG88

AVOID INJURY FROM ROLLOVER ACCIDENTS

WEAR YOUR SEAT BELT

DO NOT ATTEMPT TO JUMP CLEAR OF TIPPING MACHINE—SERIOUS OR FATAL CRUSHING INJURIES WILL RESULT

MACHINE WILL TIP OVER FASTER THAN YOU CAN JUMP FREE

To avoid rollovers:

Be careful when operating on a slope.

Avoid sharp turns.

Balance loads so weight is evenly distributed and load is stable.

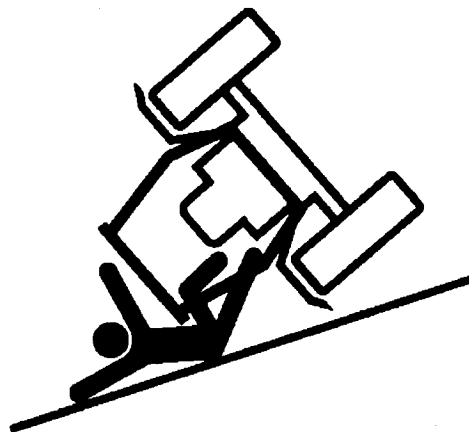
Carry tools and loads close to the ground to aid visibility and lower center of gravity.

Reduce speed before turning or swinging load.

Know capacity of machine. Do not overload.

Be careful when operating at the edge of an excavation, trench, or drop-off, and loading or unloading from a trailer.

Read and understand the operating instructions in this operator's manual.



**USE
SEAT
BELT**

T7242EA -19-22FEB90

TX,05,DH1525 -19-21JUN91-1/1

AVOID INJURY FROM BACKOVER ACCIDENTS

BEFORE MOVING MACHINE, BE SURE ALL PERSONS ARE CLEAR OF AREA

ALWAYS BE ALERT FOR BYSTANDERS MOVING INTO THE WORK AREA. USE HORN OR OTHER SIGNAL TO WARN BYSTANDERS BEFORE MOVING MACHINE

WHEN USING A SIGNAL PERSON, KEEP PERSON IN VIEW AT ALL TIMES. BE SURE SIGNAL PERSON IS CLEAR BEFORE BACKING UP

To avoid backover accidents:

Always look around before you back up. Be sure that everyone is in the clear.

Keep bystanders away from pivot area of an articulated machine.

Keep reverse warning alarm in working condition, if equipped.

Use a signal person when backing up if view is obstructed. Always keep signal person in view.

Learn the meaning of all flags, signs, and markings used on the job, and who has the responsibility for signaling.

Keep windows, mirrors, and lights clean and in good condition.

Dust, heavy rain, fog, etc., can reduce visibility. As visibility decreases, reduce speed and use proper lighting.

Read and understand the operating instructions in this operator's manual.

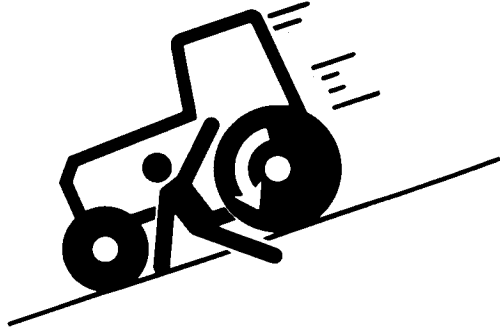


T7241AY -JUN-21FEB90

AVOID INJURY FROM ROLLAWAY ACCIDENTS

TO PREVENT ROLLAWAY, ALWAYS MAKE SURE MACHINE IS PROPERLY SECURED BEFORE LEAVING OPERATOR'S SEAT

DEATH OR SERIOUS INJURY MAY RESULT IF YOU ATTEMPT TO MOUNT OR STOP A MOVING MACHINE



T7241AZ -UN-21FEB90

To avoid rollaways:

Select level ground when possible to park machine.

Move transmission control lever to neutral "N", engage neutral lock, and engage park brake.

Lower all equipment to ground.

Stop the engine.

Block all wheels if you must park on a grade. Position machine to prevent rolling.

Park a reasonable distance from other machines.

Read and understand the operating instructions in this operator's manual.

TX,05,DH2478 -19-26SEP92-1/1

INSPECT MACHINE

Inspect your machine carefully each day by walking around it before you start it. (See Pre-Start Inspection Chapter.)



T6607AQ -UN-18OCT88

T82,BHSA,CL -19-14MAR90-1/1

USE HANDHOLDS AND STEPS

Falling is one of the major causes of personal injury.

When you get on and off the machine, always maintain a three point contact with the steps and handrails, and face the machine. Do not use the steering wheel or any controls as handholds.

Never jump on or off the machine. Never mount or dismount a moving machine.

Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.



T6981AN -UN-15JUN89

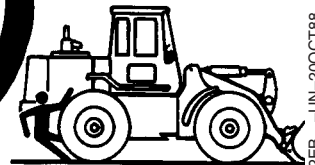
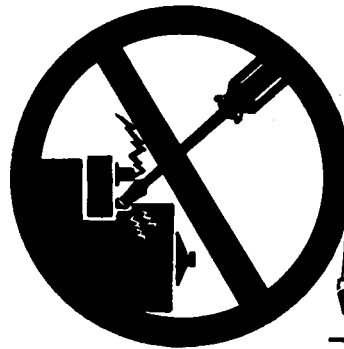
TX,05,DH553 -19-18MAR91-1/1

PREVENT MACHINE RUNAWAY

Avoid possible injury or death from a runaway machine.

DO NOT start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

Never start engine while standing on ground. Start engine only from operator's seat with transmission control lever locked in neutral and park brake engaged.



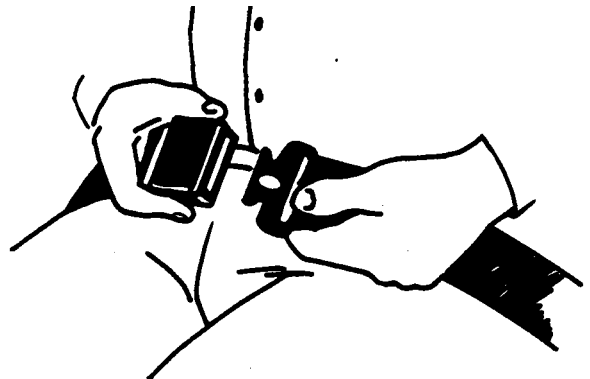
T6642EB -UN-20OCT88

TX,05,DH2281 -19-06OCT92-1/1

USE SEAT BELT PROPERLY

Overturns may occur if proper operating instructions are not followed.

Use your seat belt.



TS175 -UN-23AUG88

TX,05,JC1044 -19-12JAN96-1/1

MAINTAIN SEAT BELT

It is important to use the seat belt on ROPS equipped machines to minimize the chance of injury from an accident such as an overturn. Keep the seat belt in good condition.

The complete seat belt assembly should be replaced after three years of usage, regardless of appearance.

Between replacement intervals:

Carefully examine buckle, webbing, and attaching hardware.

Be sure that the retractor, if equipped, locks to prevent belt extension after latching buckle.

Be sure that attaching hardware is in place. Tighten, if necessary.

Replace the seat belt if it does not operate properly, or if it is damaged, worn, or deteriorated.

TX,05,JC242 -19-03MAR95-1/1

SECONDARY EXITS

Machines equipped with cabs are equipped with secondary exits. For additional secondary exit information, see "Windows" in Operator's Station, chapter 10 of this manual.

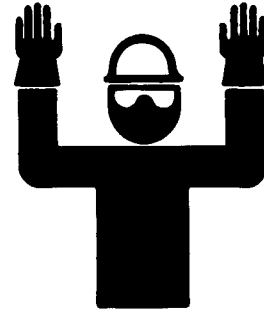
TX,05,JC1051 -19-18JAN96-1/1

TRAVEL SAFELY

Know the location of bystanders before moving the machine.

Always keep the reverse warning alarm in working condition. It warns people when the machine starts to move in reverse.

Use a signal person when moving the machine in congested areas. Coordinate hand signals before starting the machine.



T6964AD -UN-20DEC88

TX,05,DH496 -19-02AUG89-1/1

DRIVE MACHINE SAFELY

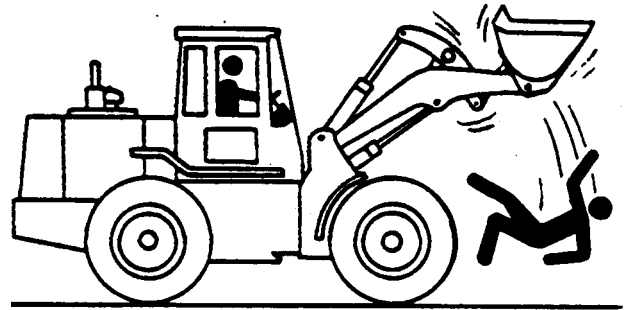
Walk around machine to clear all persons from area of operation and machine movement.

Always check area to rear before shifting to reverse.

Drive carefully in congested areas, over rough ground, near ditches for excavations, and on slopes or curves.

Keep machine in gear when going down hills.

Use accessory lights and devices to warn operators of other vehicles.



T6582AS -UN-25OCT88

TX,05,DH1931 -19-21JUN91-1/1

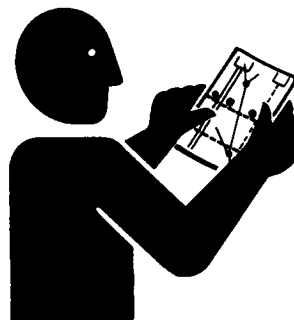
OPERATE MACHINE WITH CAUTION

Check location of cables, gas lines, and water mains before digging.

Keep loading area smooth.

Never lower a loaded bucket with the boom and bucket control lever in the float position.

Increase the power gradually when pulling a heavy load or when driving out of a ditch or excavation.



T6642EF -UN-18OCT88

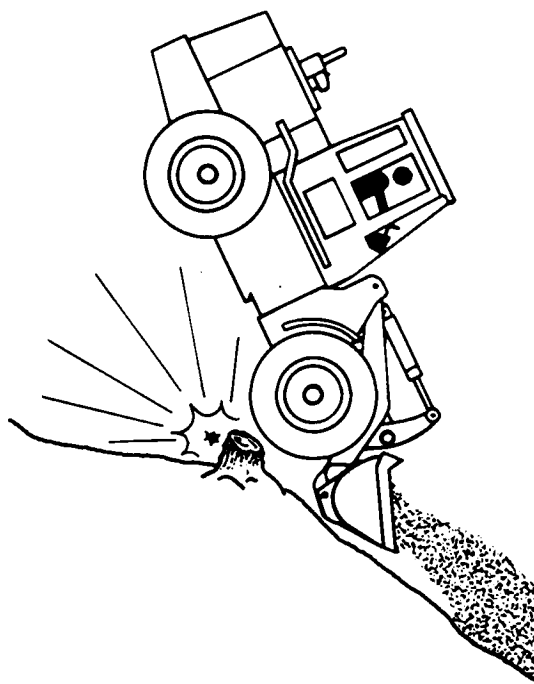
TX,05,DH1932 -19-06JUN91-1/1

OPERATING ON SLOPES

Avoid sideslope travel whenever possible. Drive up slope in forward and down in reverse. The danger of tipping is always present.

In steep slope operation, do not allow engine to overspeed. Select low gear speed before starting down slope.

The grade of the slope you should attempt will be limited by such factors as ground condition, and load being handled.



T7050AB -UN-03AUG89

TX,05,RR,171 -19-27APR89-1/1

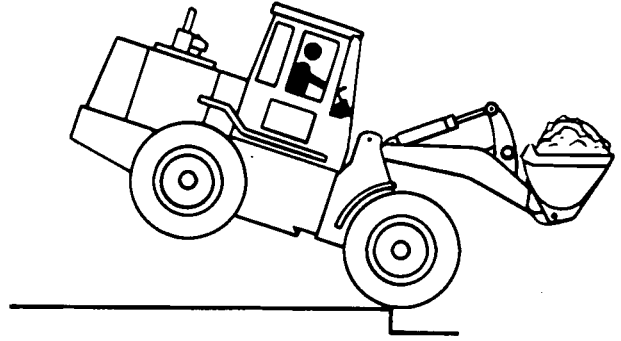
CARRYING LOADS

Carry loader bucket as low as possible for better stability and visibility.

Handle only those loads which are properly arranged. Do not overload.

Do not start, stop, or turn quickly when transporting a load.

Do not change forward or reverse directions quickly when carrying a load.



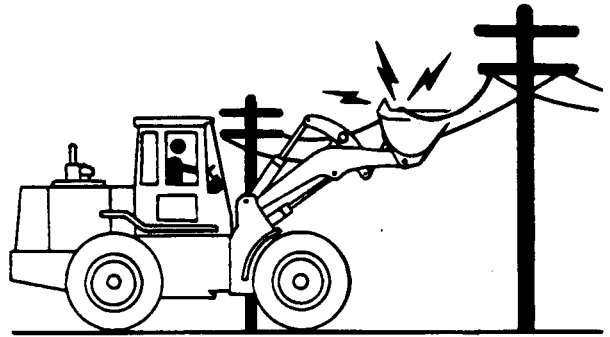
T7050AA -UN-03AUG89

TX,05,RR,172 -19-03JUN92-1/1

AVOID POWER LINES

Serious injury or death can result from contact with electric lines.

Never move any part of the machine or load closer to electric line than 3 m (10 ft) plus twice the line insulator length.



T6642EG -UN-20JUN89

02T,05,J18 -19-06JUN91-1/1

BEWARE OF EXHAUST FUMES

Prevent asphyxiation. Engine exhaust fumes can cause sickness or death.

If you must operate in a building, be sure there is adequate ventilation. Either use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring enough outside air into the area.



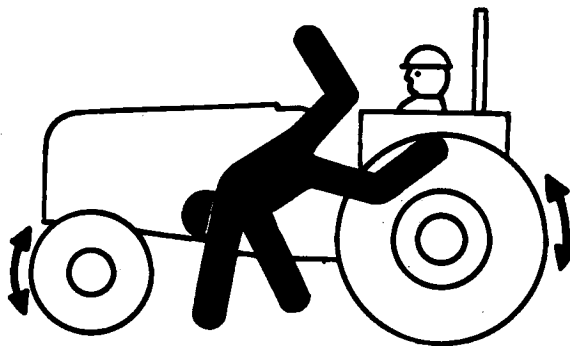
T6459AO -UN-18OCT88

TX,DH,2 -19-09FEB89-1/1

KEEP RIDERS OFF MACHINE

Only allow the operator on the machine. Keep riders off.

Riders on machine are subject to injury such as being struck by foreign objects and being thrown off of the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.



TS290 -UN-23AUG88

DX,RIDER -19-03MAR93-1/1

HANDLE FUEL SAFELY—AVOID FIRES

Handle fuel with care: it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping machine clean of accumulated trash, grease, and debris. Always clean up spilled fuel.



TS202 -UN-23AUG88

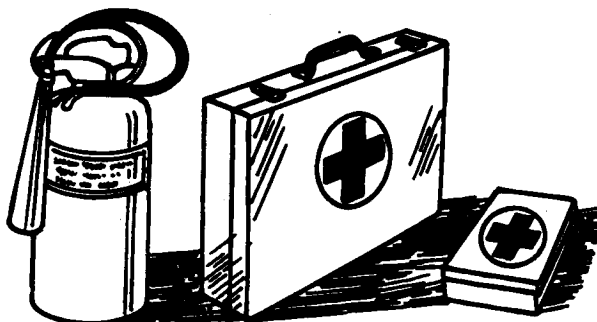
DX,FIRE1 -19-03MAR93-1/1

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -UN-23AUG88

DX,FIRE2 -19-03MAR93-1/1

HANDLE STARTING FLUID SAFELY

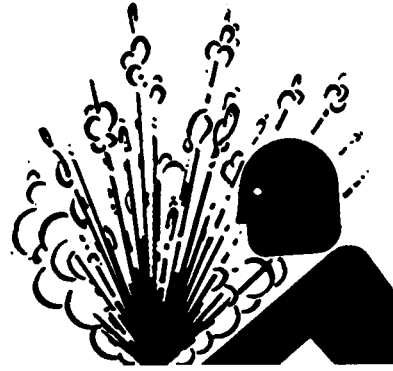
Starting fluid is highly flammable.

Keep all sparks and flame away when using it. Keep starting fluid away from batteries and cables.

Remove container from machine if engine does not need starting fluid.

To prevent accidental discharge when storing the pressurized can, keep the cap on the container, and store in a cool, protected location.

Do not incinerate or puncture a starting fluid container.



T6464AV -JUN-18OCT88

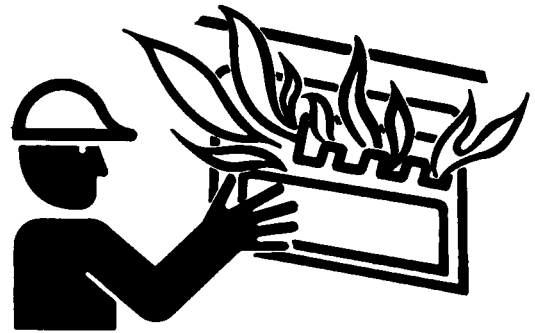
TX,05,FF2281 -19-22FEB91-1/1

CLEAN TRASH FROM MACHINE

Keep engine compartment, radiator, batteries, hydraulic lines, fuel tank, and operator's station clean.

Temperature in engine compartment may go up immediately after engine is stopped. BE ON GUARD FOR FIRES DURING THIS PERIOD.

Open access door(s) to cool the engine faster, and clean engine compartment.

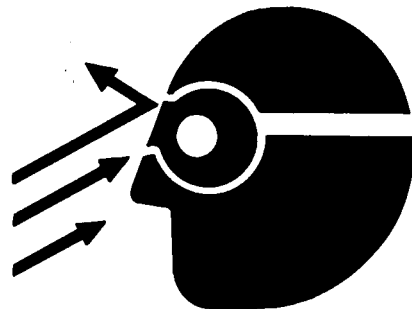


T6669AG -JUN-18OCT88

02T,05,J33 -19-14MAR90-1/1

PROTECT AGAINST FLYING DEBRIS

When you drive connecting pins in or out, guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.



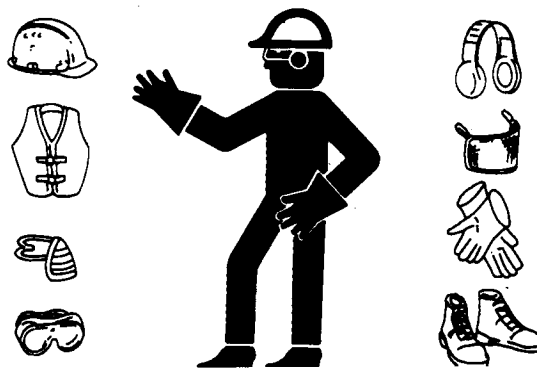
T6642DK -JUN-18OCT88

02T,05,J45 -19-30MAY90-1/1

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



DX,WEAR2 -19-03MAR93-1/1

TS206 -UN-23AUG88

PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



DX,NOISE -19-03MAR93-1/1

TS207 -UN-23AUG88

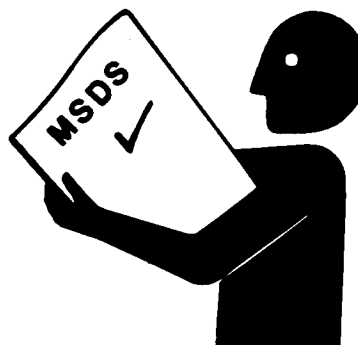
HANDLE CHEMICAL PRODUCTS SAFELY

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with your machine include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

See your authorized dealer for MSDS's on chemical products used with your machine.



TX,05,DH2500 -19-02OCT92-1/1

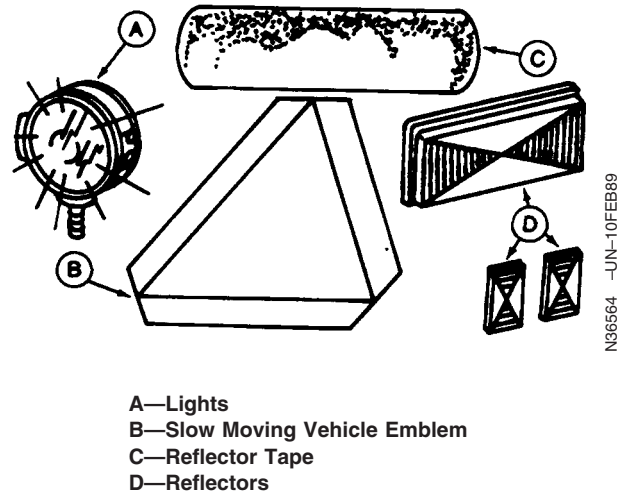
TS1132 -UN-26NOV90

USE SAFETY LIGHTS AND DEVICES

Operators of machines that travel below normal highway speeds should take special precautions to avoid collision with other vehicles.

Before driving on public roads, check state and local laws that may apply to tractors, self-propelled machines, and towed equipment. Additional lights, mirrors, SMV emblems, or reflectors may be required.

Install and use all safety lights and devices necessary to assure safe operation and local compliance. Keep these safety items in good condition. Replace missing or damaged parts immediately.



TX,05,DH1729 -19-26JAN91-1/1

KEEP ROPS INSTALLED PROPERLY

A damaged roll-over protective structure (ROPS) should be replaced, not reused.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting.

If ROPS was loosened or removed for any reason, inspect it carefully before operating the machine again.

To maintain the ROPS:

- Replace missing hardware using correct grade hardware.
- Check hardware torque.
- Check isolation mounts for damage, looseness or wear; replace them if necessary.
- Check ROPS for cracks or physical damage.

TX,05,DH1846 -19-14MAY91-1/1

KEEP THE OPERATOR PROTECTIVE STRUCTURE (OPS) IN PLACE

It is important to keep the operator protective structure (OPS) in place (doors, screens, windows, windshield, etc.) to minimize hazards from whipping or intruding objects. To maintain OPS protection, replace damaged parts immediately.

Replace 3-piece hard-coated polycarbonate windshield with only Lexan® Margard 5000 or equivalent.

The protection offered by OPS will be impaired if OPS is subjected to structural damage, is involved in an overturn incident, or is altered by welding, bending, drilling, or cutting. Damaged OPS components should be replaced, not reused.

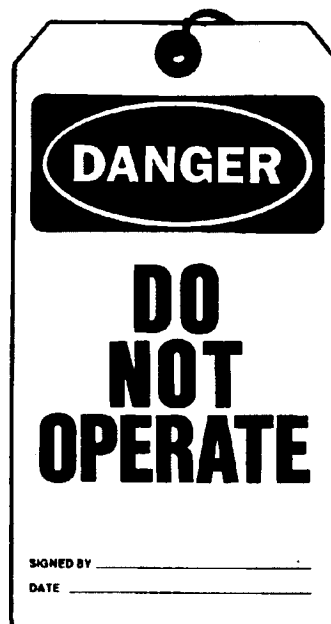
Keep all bolts and attaching hardware tight.

TX,05,JC1068 -19-21FEB96-1/1

WARN OTHERS OF SERVICE WORK

Unexpected machine movement can cause serious injury.

Before performing any work on the machine, attach a "DO NOT OPERATE" tag to the steering wheel.



T7447AO -19-22APR91

TX,05,DH1820 -19-14MAY91-1/1

PRACTICE SAFE MAINTENANCE

If maintenance procedure must be performed with engine running, DO NOT leave machine unattended.

Securely support any machine elements that must be raised for service work.

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate or service machine while it is moving. Keep hands, feet, and clothing from power-driven parts.

Before servicing machine and before leaving the operator's seat:

1. Park machine on a level surface.
2. Lower all equipment to ground.
3. Move transmission control lever to neutral "N". Engage neutral lock.



CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.

4. Engage park brake.
5. Install the frame locking bar before working in the frame hinge pivot area.
6. Turn key switch to STOP.
7. Turn battery disconnect switch OFF, if equipped.



TS218 -UN-23AUG88

8. Allow engine to cool.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

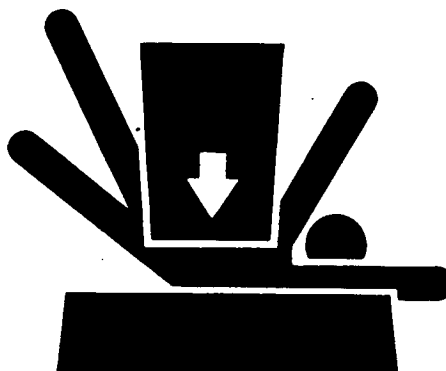
Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

TX,05,DH2122 -19-31JUL92-2/2

SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



TS229 -UN-23AUG88

DX,LOWER -19-04JUN90-1/1

REMOVE PAINT BEFORE WELDING OR HEATING

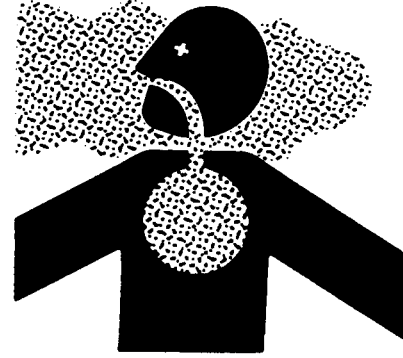
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



TS220 -UN-23AUG88

DX,PAINT -19-03MAR93-1/1

AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.



TS953 -UN-15MAY90

DX,TORCH -19-03MAR93-1/1

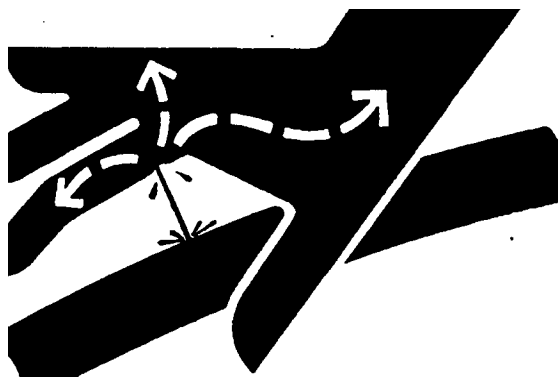
AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 -UN-23AUG88

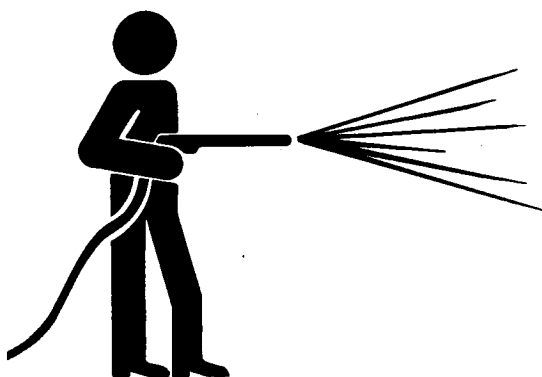
DX,FLUID -19-03MAR93-1/1

CLEAN THE MACHINE REGULARLY

Remove any grease, oil, fuel, or debris build-up to avoid possible injury or machine damage.

High pressure washing [greater than 1379 kpa (13.8 bar) (200 psi)] can damage freshly painted finishes. Paint should be allowed to air dry for 30 days minimum after receipt of machine before cleaning with high pressure. Use low pressure wash operations until 30 days have elapsed.

Do not spray oil cooler fins at an angle. Fins may bend.



T6642EJ -UN-18OCT88

TX,05,FF2787 -19-27JUL94-1/1

SERVICE COOLING SYSTEM SAFELY

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



DX,RCAP -19-04JUN90-1/1

TS281 -UN-23AUG88

STORE ATTACHMENTS SAFELY

Stored attachments such as dual wheels, cage wheels, and loaders can fall and cause serious injury or death.

Securely store attachments and implements to prevent falling. Keep playing children and bystanders away from storage area.



DX,STORE -19-03MAR93-1/1

TS219 -UN-23AUG88

DISPOSE OF WASTE PROPERLY

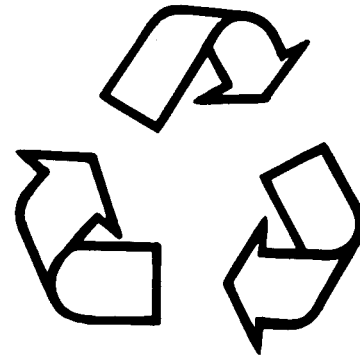
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with your machine include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your authorized dealer.



TX,05,DH2502 -19-26AUG92-1/1

TS1133 -UN-26NOV90

Safety Signs

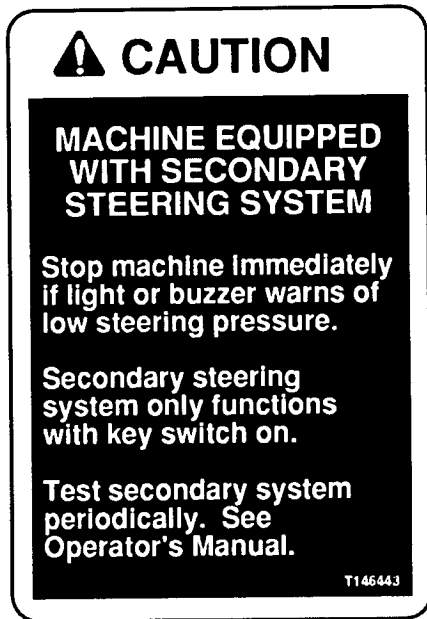


T7967AK -19-22MAR93



T7829AA -UN-31AUG92

TX,06,JC1102 -19-18MAR96-1/12



T146443



A-Warning Decal

T7939AI -19-22MAR93

T7773CV -UN-31AUG92

TX,06_JC1102 -19-18MAR96-2/12

WARNING

Avoid injury from escaping fluid.
Contents of this accumulator are
under pressure.

1. Refer to proper Machine Model
Technical Manual for removal and
installation procedure.
2. This accumulator is charged with
DRY NITROGEN by the
manufacturer and is NOT
Rechargeable.

T155572

Maximum Working Pressure
22060 kPa [3200 PSI]

T8417AD -19-09FEB95

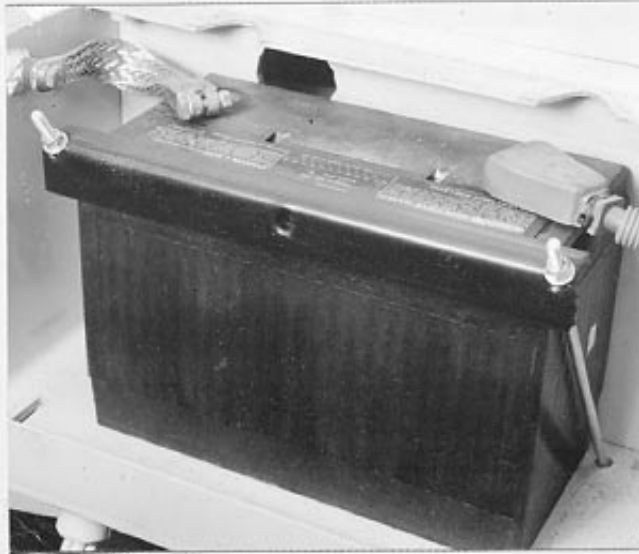


T100704 -UN-22MAR96

TX,06,JC1102 -19-18MAR96-3/12

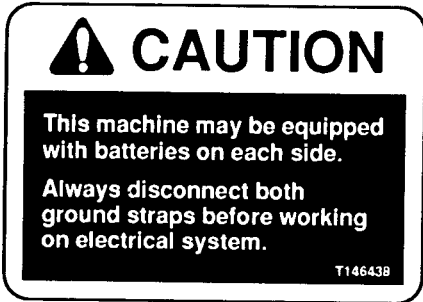


T7593AC -19-30AUG91



T6976AE -UN-30JAN89

TX,06,JC1102 -19-18MAR96-4/12



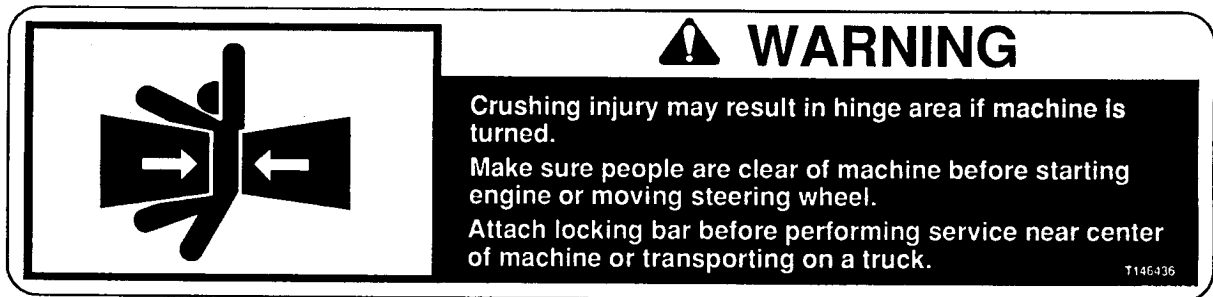
T146438

T7939AK -19-22MAR93



T8029AF -UN-15JUN93

TX,06,JC1102 -19-18MAR96-5/12



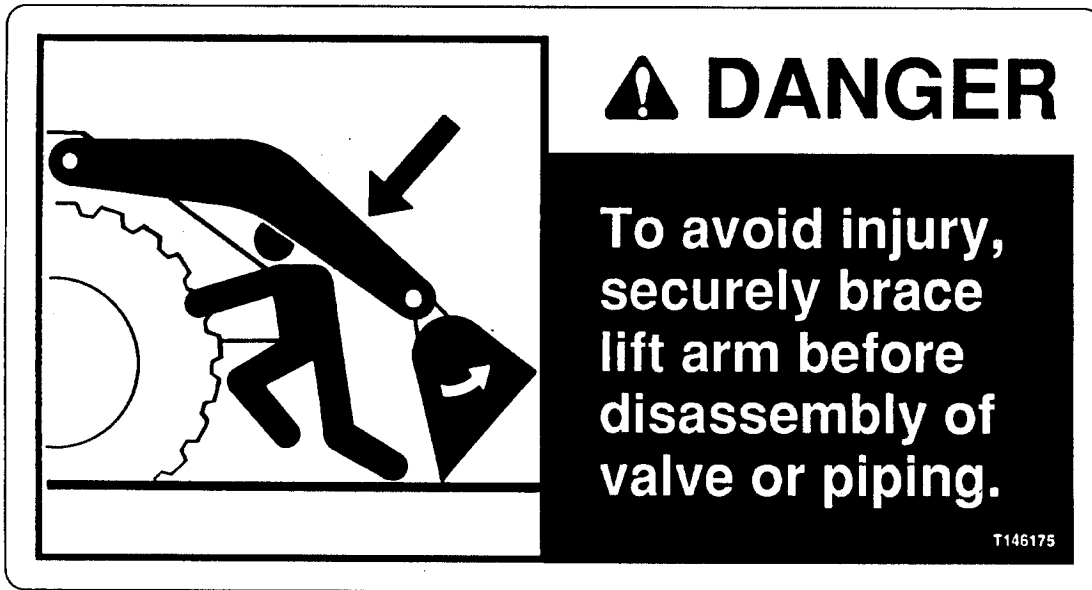
T146436

A-Warning Decal



Left Side Shown

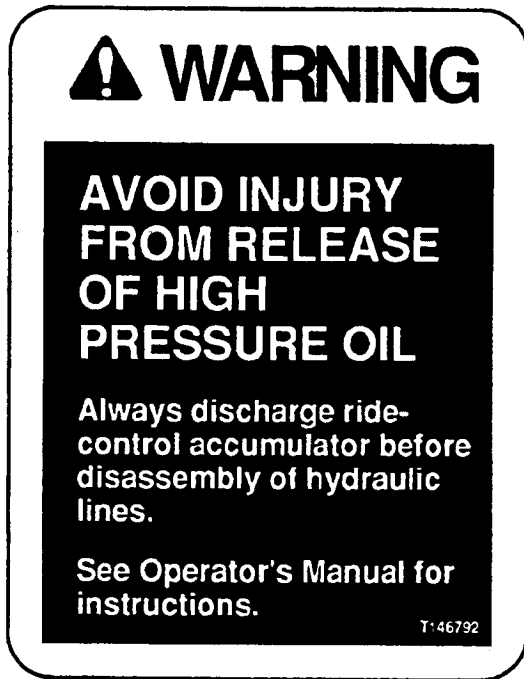
TX,06,JC1102 -19-18MAR96-6/12



TX,06,JC1102 -19-18MAR96-7/12

T8029AR -19-16JUN93

T8029AQ -UN-21JUN93



A-Warning Decal, If Equipped

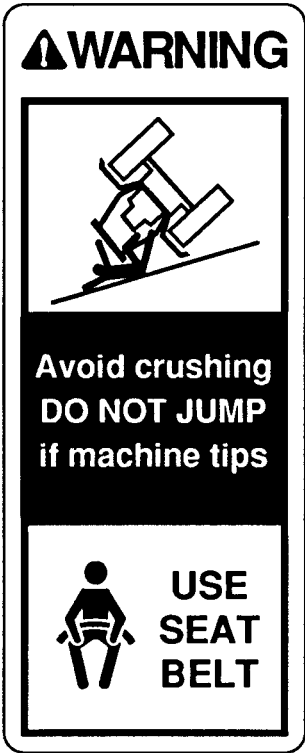


T7829AT -19-17SEP92



Right Side of Machine

TX,06,JC1102 -19-18MAR96-8/12



T7916AC -19-06JAN93



T7773AZ -UN-10AUG92

TX,06,JC1102 -19-18MAR96-9/12



T7748CU -19-14OCT92



T7773CA -UN-10AUG92

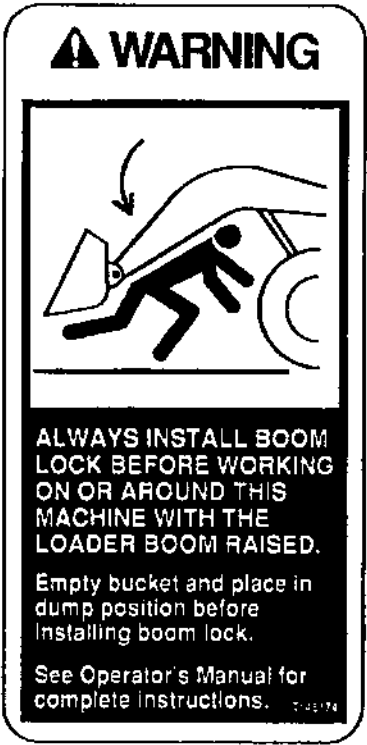
TX,06,JC1102 -19-18MAR96-10/12



T7829AQ -19-31AUG92



TX,06,JC1102 -19-18MAR96-11/12

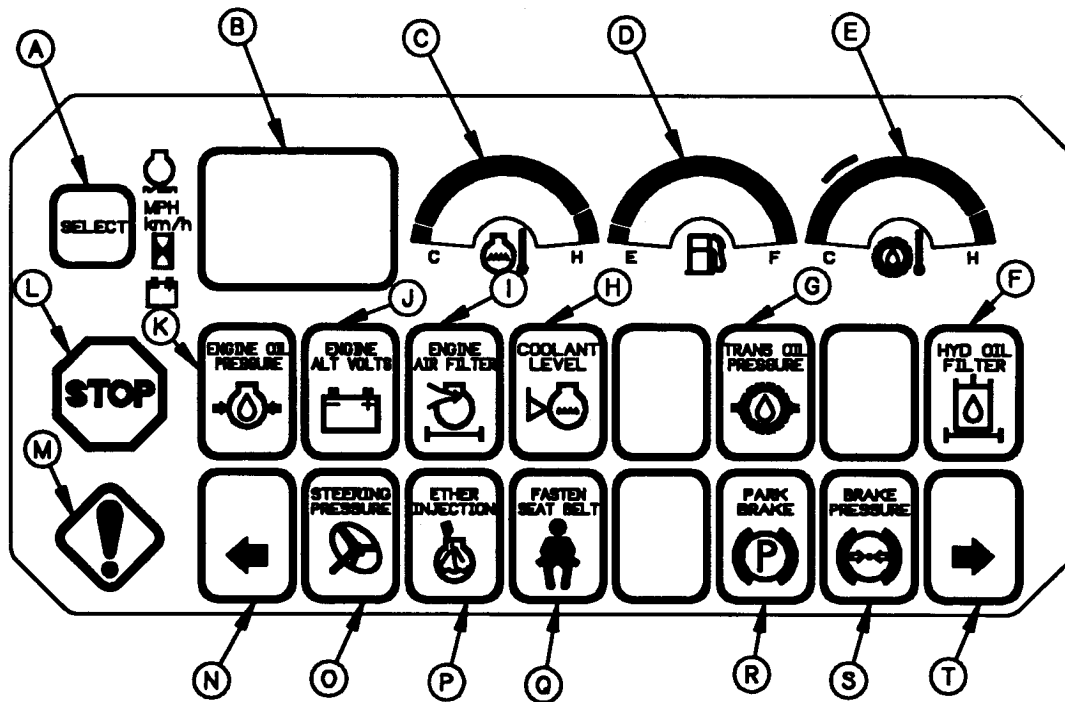


Located on top of radiator cap

TX,06,JC1102 -19-18MAR96-12/12

Operator's Station

GAUGES, INDICATORS, SWITCHES, AND ACCESSORIES



A—SELECT Switch
 B—Digital Display
 C—Engine Coolant Temperature Gauge
 D—Fuel Gauge
 E—Transmission Oil Temperature Gauge
 F—Hydraulic Oil Filter Restriction Indicator
 G—Transmission Oil Pressure Indicator—If Equipped

H—Engine Coolant Level Indicator
 I—Engine Air Filter Restriction Indicator
 J—Engine Alternator Voltage Indicator
 K—Engine Oil Pressure Indicator
 L—STOP Indicator
 M—Service Required Indicator

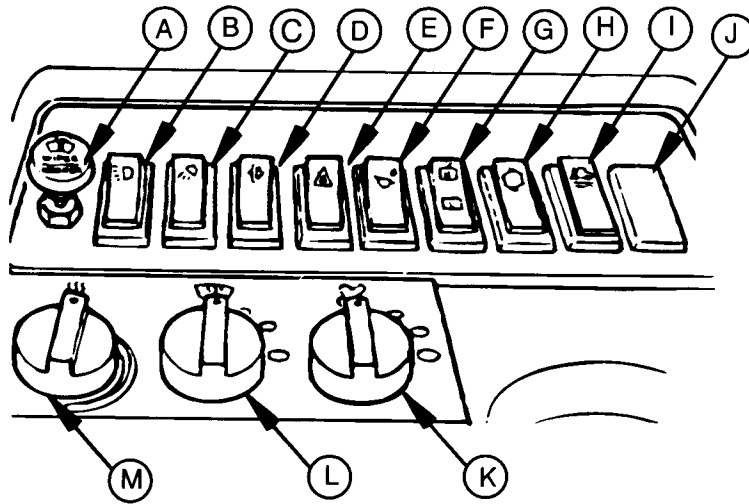
N—Left Turn Signal Indicator
 O—Steering Pressure Indicator—If Equipped With Secondary Steering
 P—Ether Injection Indicator
 Q—Fasten Seat Belt Indicator
 R—Park Brake Indicator

S—Brake Pressure Indicator
 T—Right Turn Signal Indicator

TX,10,JC1046 -19-16JAN96-1/2

T7773AP -UN-11JUN92

Operator's Station



T8375AN -UN-02DEC94

A—Front Wiper Switch
 B—Drive Light Switch
 C—Work Light Switch
 D—Clutch Cut-off Switch
 E—Warning Light Switch
 F—Boom Down Switch

G—Rear Wiper Switch
 H—Air Conditioner Control
 Switch—If Equipped
 I—Pin Disconnect Switch—
 544G TC

J—Ride Control Switch—If
 Equipped
 K—Blower Knob
 L—Air Conditioner
 Defroster Blower Knob

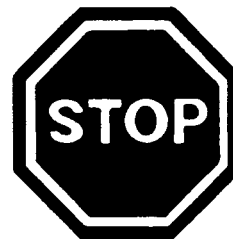
M—Temperature Control
 Knob

TX,10,JC1046 -19-16JAN96-2/2

STOP INDICATOR AND ALARM



CAUTION: Prevent possible injury, or machine damage. If STOP indicator light flashes and alarm sounds, stop immediately and investigate cause of problem.



The STOP indicator light flashes and alarm sounds when:

Engine oil pressure is low. STOP ENGINE IMMEDIATELY.

Engine coolant temperature is excessively high. Stop machine and allow engine to cool. Shut off engine and take corrective action.

Engine coolant level is low. Stop machine and allow engine to cool. Shut off engine and take corrective action.

Transmission oil temperature is excessively high. Stop machine and take corrective action.

Transmission oil pressure is low. Stop machine and take corrective action.

Transmission is shifted into gear with park brake engaged. Disengage park brake.

Brake pressure is low. Stop machine and take corrective action.

Steering system pressure is low, and secondary steering is activated. Stop machine and take corrective action.

If indicators do not function correctly, see Troubleshooting chapter.

T7673AM -UN-06JAN92

TX,10,DH2165 -19-02OCT92-1/1

SERVICE REQUIRED INDICATOR (YELLOW)

If service required indicator lights, a problem is developing. It is not necessary to stop the engine immediately, but the cause should be investigated as soon as possible.

The service required indicator lights when:

- Alternator voltage is low.
- Engine air filter is restricted.
- Hydraulic oil filter is restricted.

NOTE: Cold oil may cause hydraulic oil filter restriction indicator to light temporarily.



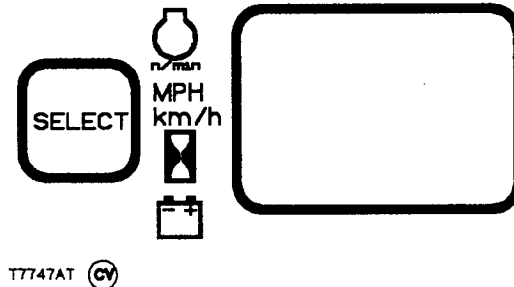
T6201BL -UN-18OCT88

TX,10,DH2282 -19-12MAY93-1/1

DIGITAL DISPLAY

Engine running:

Press the SELECT switch to change information on the digital display. Information sequences from the tachometer, to the speedometer (in mph), to the speedometer (in km/h), to the hourmeter, to the voltmeter, and then back to the tachometer. If the switch is pressed continuously, the information will sequence every 4 seconds.



T7747AT -UN-19MAY92

Engine not running, key switch in OFF position:

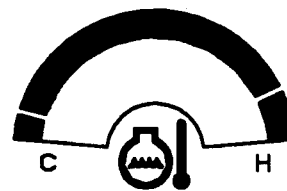
Press the SELECT switch to show hour meter information, engine coolant temperature information, fuel tank level information, and transmission oil temperature information on the digital display. If switch is held down for more than 4 seconds, the hourmeter will change to display battery voltage.

TX,10,DH2347 -19-19MAY93-1/1

ENGINE COOLANT TEMPERATURE GAUGE

The first arrow will flash until engine temperature warms to 38°C (100°F).

All the arrows will flash, STOP indicator light will flash, and audible alarm will sound when temperature reaches above 110°C (230°F). If all 9 arrows are ON but not flashing, system has a malfunction. Stop machine and allow engine to cool. Shut off engine and take corrective action.

T7747AU 

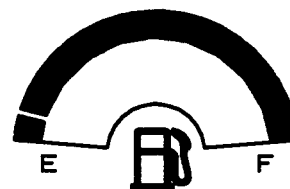
T7747AU -UN-19MAY92

TX,10,JC1063 -19-14FEB96-1/1

FUEL GAUGE

First arrow will flash if fuel is low or system has a malfunction.

Always fill fuel tank at the end of the day to eliminate condensation in fuel tank.

T7747AV 

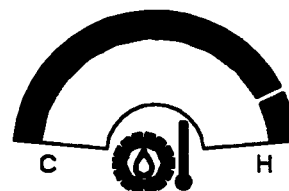
T7747AV -UN-19MAY92

TX,10,DH2164 -19-29NOV94-1/1

TRANSMISSION OIL TEMPERATURE GAUGE

Audible alarm will sound once when temperature first reaches 127-132°C (260-270°F).

All arrows will flash, STOP indicator light will flash, and audible alarm will sound when temperature reaches above 133°C (271°F). If all 9 arrows are ON but not flashing, system has a malfunction. Stop machine and allow engine to cool. Shut off engine and take corrective action.

T7747AW 

T7747AW -UN-19MAY92

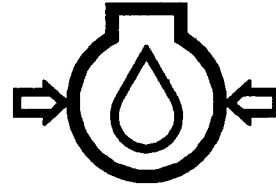
TX,10,JC245 -19-29NOV94-1/1

ENGINE OIL PRESSURE INDICATOR

IMPORTANT: Prevent possible engine damage. If engine oil pressure indicator light comes on while operating, stop machine. **STOP ENGINE IMMEDIATELY.**

Indicator light will light, STOP indicator will flash, and alarm will sound when engine oil pressure is low. Stop machine. **STOP ENGINE IMMEDIATELY.**

NOTE: Cold oil or extreme off level operation may cause indicator to light.



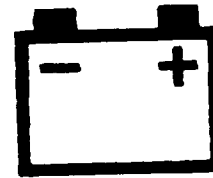
T7747AA 

T7747AA -UN-19MAY92

TX,10,DH2153 -19-29NOV94-1/1

ALTERNATOR VOLTAGE INDICATOR

Indicator light will light and service required indicator light will light when alternator output is low. Check battery charge by selecting battery voltage on digital display.

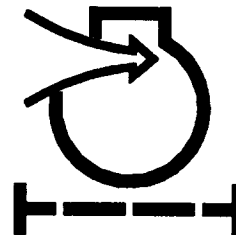


T6201BD -UN-18OCT88

TX,10,DH2549 -19-02OCT92-1/1

ENGINE AIR FILTER RESTRICTION INDICATOR

Indicator will light and service required indicator will light when air filter elements are restricted. Clean or change filter elements.



T7747AB 

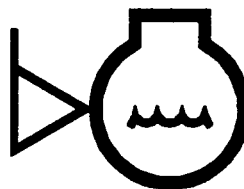
T7747AB -UN-19MAY92

TX,10,DH2154 -19-08FEB93-1/1

ENGINE COOLANT LEVEL INDICATOR

IMPORTANT: Prevent machine damage. Low coolant will result in engine or radiator damage.

Indicator light will light, STOP indicator light will flash, and alarm will sound when engine coolant level is low. Stop machine and allow engine to cool. Shut off engine and take corrective action.



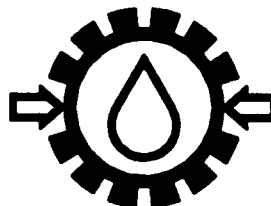
T7747AC (CV)

T7747AC -UN-19MAY92

TX,10,DH2152 -19-02OCT92-1/1

TRANSMISSION OIL PRESSURE INDICATOR—IF EQUIPPED

Indicator light will light and STOP indicator light will light when transmission oil pressure is low. Stop machine and allow engine to cool. Shut off engine and take corrective action.



T7747AD (CV)

T7747AD -UN-19MAY92

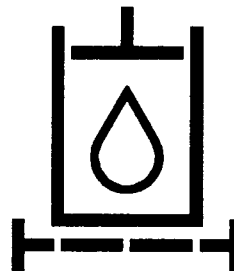
TX,10,JC1048 -19-16JAN96-1/1

HYDRAULIC OIL FILTER RESTRICTION INDICATOR

IMPORTANT: Prevent possible hydraulic pump damage. Change hydraulic oil filter as soon as possible when a problem occurs.

Indicator light will light and service required indicator light will light when hydraulic filter element is restricted.

NOTE: Cold oil may cause hydraulic oil filter restriction indicator light to light until oil is warm.



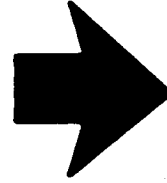
T7747AE (CV)

T7747AE -UN-19MAY92

TX,10,DH2158 -19-13SEP94-1/1

RIGHT TURN SIGNAL INDICATOR

Indicator light will light when right turn signal switch is engaged.



T6201BK -UN-18OCT88

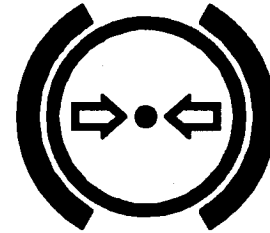
TX,DH,39 -19-12APR93-1/1

BRAKE OIL PRESSURE INDICATOR



CAUTION: Prevent possible injury or machine damage. If brake pressure indicator light comes on while operating, stop machine immediately.

Indicator light will light, STOP indicator light will flash, and alarm will sound when brake oil pressure is low, or brake accumulator has lost its charge. Stop machine immediately and engage park brake. Take corrective action.



T7747AF 

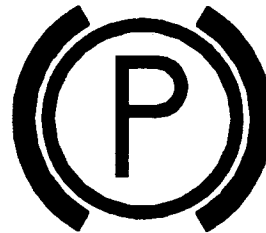
T7747AF -UN-19MAY92

TX,10,DH2157 -19-05OCT92-1/1

PARK BRAKE INDICATOR

Indicator light will light when park brake is engaged and transmission control lever is in neutral "N".

If park brake is engaged and transmission control lever is in forward "F" or reverse "R", the STOP indicator light will flash and alarm will sound. Disengage park brake.



T7747AG 

T7747AG -UN-19MAY92

TX,10,DH2156 -19-05OCT92-1/1

FASTEN SEAT BELT INDICATOR

Indicator light will light for the first 5 seconds after the engine is started to warn the operator to fasten seat belt.



T7747AH (CV)

T7747AH -UN-19MAY92

TX,10,DH2344 -19-31JUL92-1/1

ETHER INJECTION INDICATOR

Indicator light will light when the ether injection button is pressed by the operator.



T7747AI (CV)

T7747AI -UN-19MAY92

TX,10,DH2345 -19-31JUL92-1/1

STEERING PRESSURE INDICATOR—IF EQUIPPED

IMPORTANT: Prevent possible damage to secondary steering system. Stop machine immediately if secondary steering indicator light and alarm come on while operating. **THE SECONDARY STEERING SYSTEM IS NOT INTENDED FOR CONTINUOUS USE.**



T7747AJ (CV)

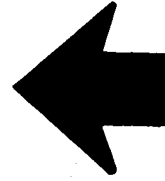
T7747AJ -UN-19MAY92

Indicator light will light, STOP indicator light will flash and alarm will sound when secondary steering system is activated. Stop machine immediately and take corrective action. The secondary steering system is not intended for continuous use.

TX,10,DH2159 -19-02OCT92-1/1

LEFT TURN SIGNAL INDICATOR

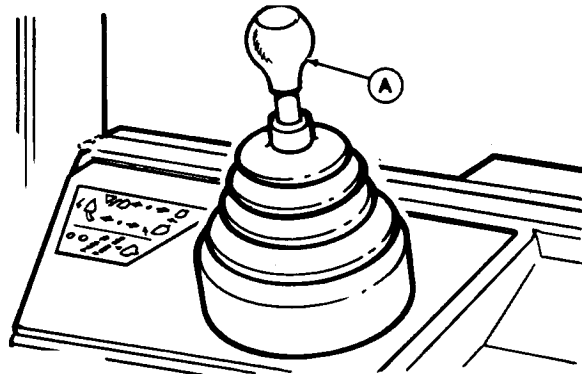
Indicator light will light when left turn signal switch is engaged.



TX,DH,38 -19-12APR93-1/1

T6201BG -UN-18OCT88

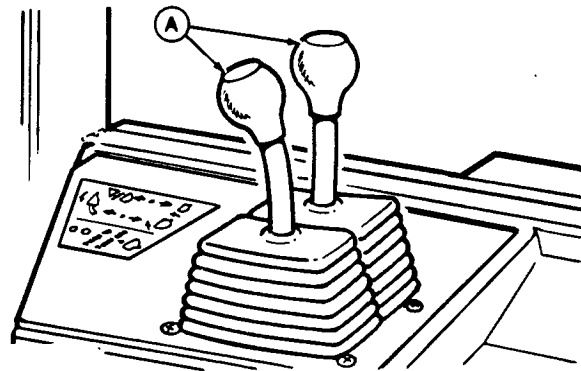
LEVERS



A—Loader Control Lever—One
Lever Design

TX,10,DH2133 -19-31JUL92-1/3

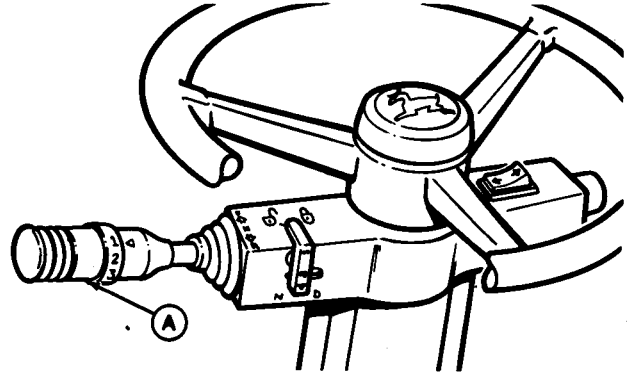
T7747BO -UN-11JUN92



A—Loader Control Levers—Two
Lever Design

TX,10,DH2133 -19-31JUL92-2/3

T7747BN -UN-11JUN92

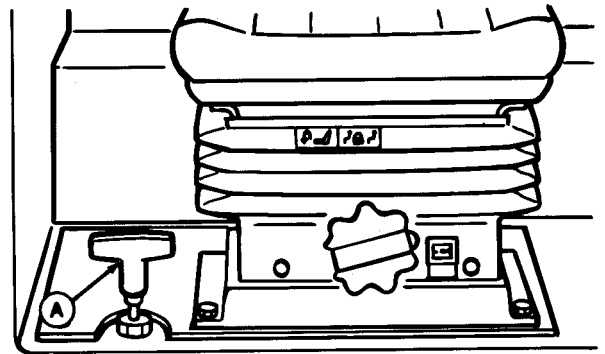


T7747AM -UN-19MAY92

A—Transmission Control Lever

TX,10,DH2133 -19-31JUL92-3/3

FRONT AXLE DISCONNECT LEVER—IF EQUIPPED

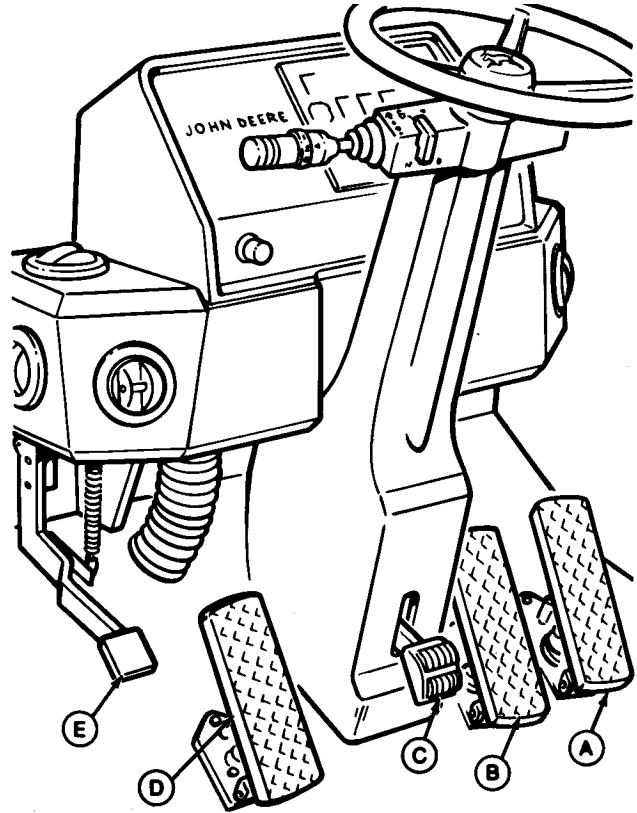


T7747AN -UN-19MAY92

A—Front Axle Disconnect Lever

TX,10,DH2137 -19-31JUL92-1/1

PEDALS

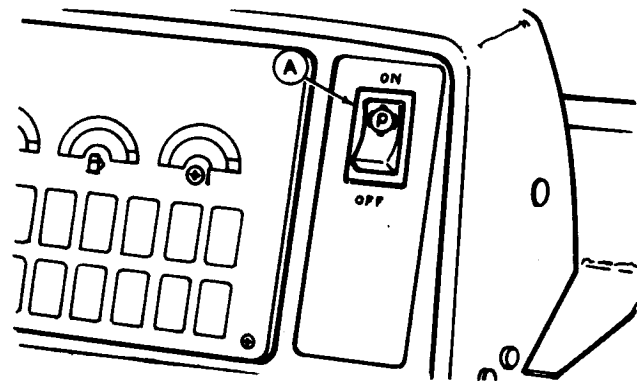


T7747AO -UN-19MAY92

- A—Accelerator Pedal
- B—Right Brake Pedal
- C—Steering Column Tilt Pedal
- D—Left Brake/Clutch Cut-off Pedal
- E—Differential Lock Pedal—If Equipped

TX,10,DH2136 -19-07OCT92-1/1

PARK BRAKE SWITCH

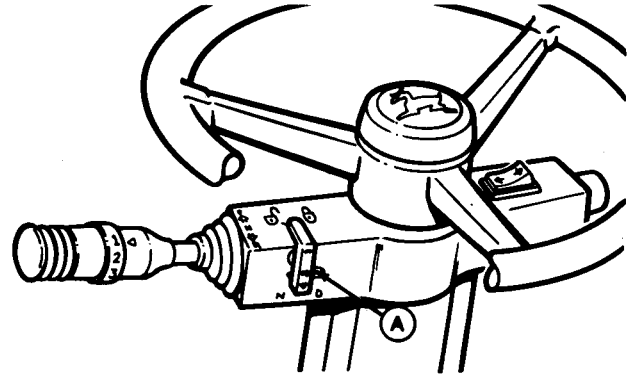


T7773AG -UN-11JUN92

- A—Park Brake Switch

TX,10,DH2285 -19-18SEP92-1/1

NEUTRAL LOCK

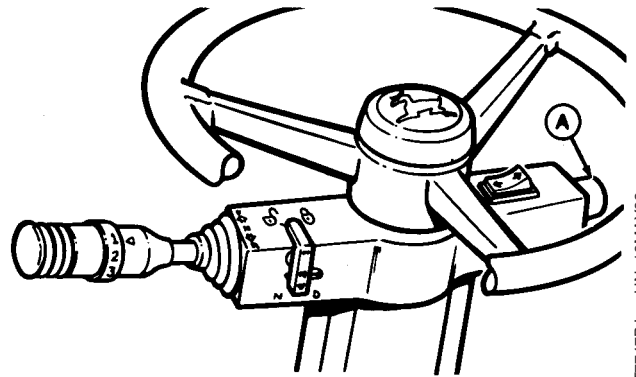


T7747BI -UN-19MAY92

A—Neutral Lock

TX,10,DH2138 -19-02OCT92-1/1

HORN BUTTON

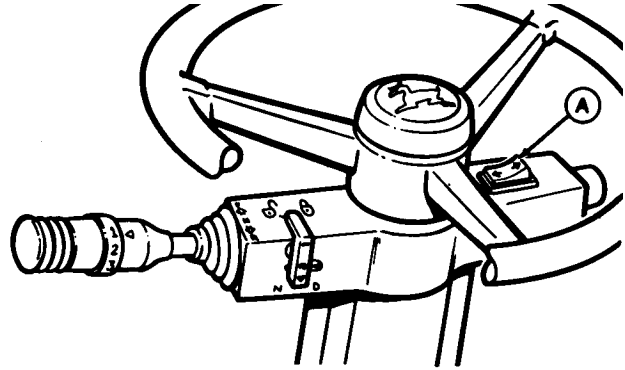


T7747BJ -UN-19MAY92

A—Horn Button

TX,10,DH2279 -19-18SEP92-1/1

TURN SIGNAL SWITCH



T7747BK -UN-19MAY92

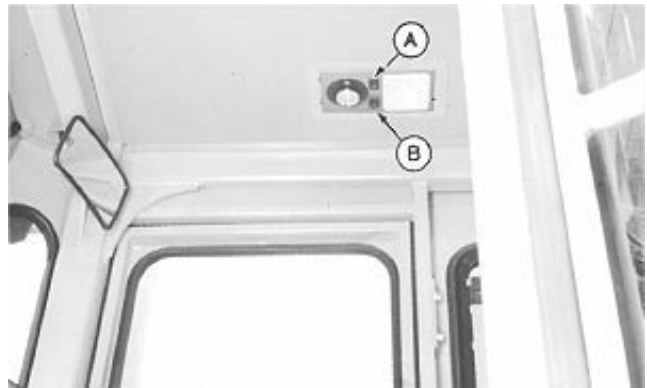
A—Turn Signal Switch

TX,10,DH2280 -19-31JUL92-1/1

DOME LIGHT AND SWIVEL LIGHT—IF EQUIPPED

Push switch (A) to light dome light.

Push switch (B) to light swivel light.



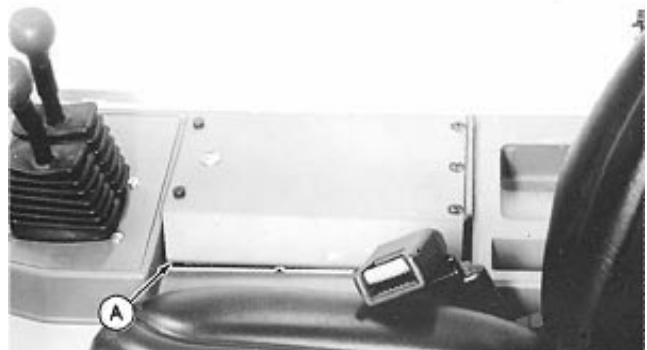
T7773AU -UN-10AUG92

A—Dome Light
B—Swivel Light

TX,10,DH2139 -19-31JUL92-1/1

VANDAL SHIELD—IF EQUIPPED

A vandal shield (A) is available for canopy equipped machines. Shield covers the side instrument panel and locks with the ignition key.



T7853AG -UN-08OCT92

TX,10,DH2140 -19-02OCT92-1/1

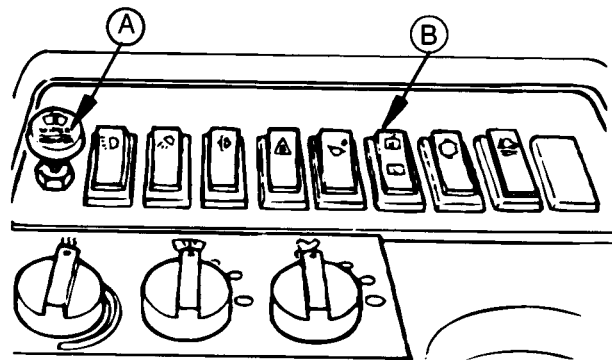
OPERATING WINDSHIELD WIPERS AND WASHERS—IF EQUIPPED

Turn front windshield wiper knob (A) clockwise to first position for low speed. Turn windshield wiper knob clockwise to second position for high speed.

Push windshield wiper knob in to wash window.

Press rear windshield wiper switch (B) to operate rear wiper.

Hold switch down to wash window



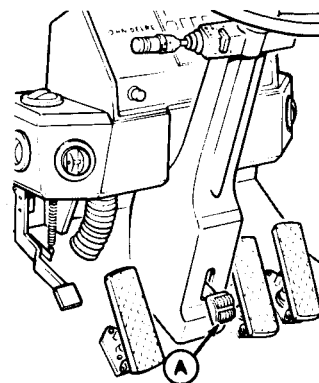
A—Front Wiper and Washer Switch
B—Rear Wiper and Washer Switch

T8375AO -UN-02DEC94

TX,10,JC271 -19-29NOV94-1/1

ADJUSTING STEERING WHEEL TILT

Depress pedal (A) to adjust steering column to desired tilt. Release pedal.



TX,10,DH2143 -19-31JUL92-1/1

T7747BH -UN-19MAY92

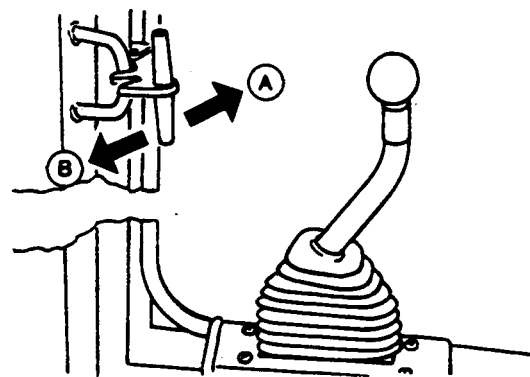
OPENING SIDE WINDOW

NOTE: The side window can be used as a secondary exit.

Push out (A) on latch handle to open window.

Pull in (B) on latch handle, positioning inner notch over catch, to close window.

Position outer notch over catch to hold window slightly open.

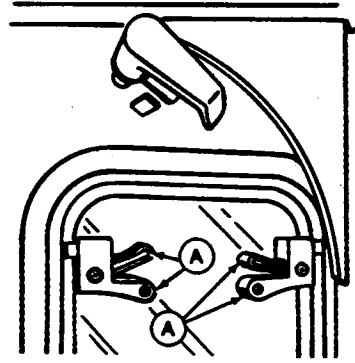


T6783AC -UN-19OCT88

TX,10,JC1052 -19-18JAN96-1/1

OPENING SLIDING SIDE WINDOW—IF EQUIPPED

Squeeze latch tabs (A) together and slide window down to desired position. Release tabs.



02T,10,MM27 -19-31JUL92-1/1

T6603AQ1 -UN-20OCT88

CAB DOOR RELEASE

Push lever (A) to release cab door.



TX,10,DH2960 -19-16JUN93-1/2

T8029AJ -UN-15JUN93

Push button (B) to release opened cab door from inside
the cab or on the ground.



TX,10,DH2960 -19-16JUN93-2/2

T8029AJ -UN-15JUN93

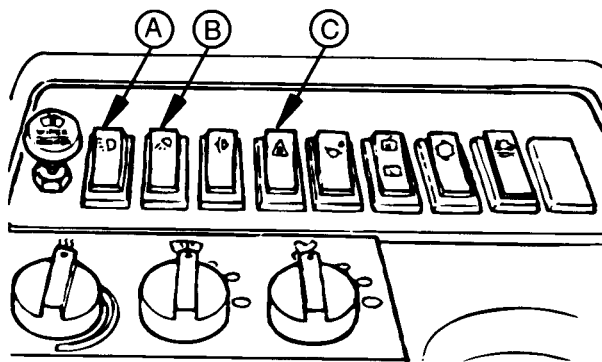
OPERATING LIGHTS

Press light switch (A). Lights (E and I) will come on.

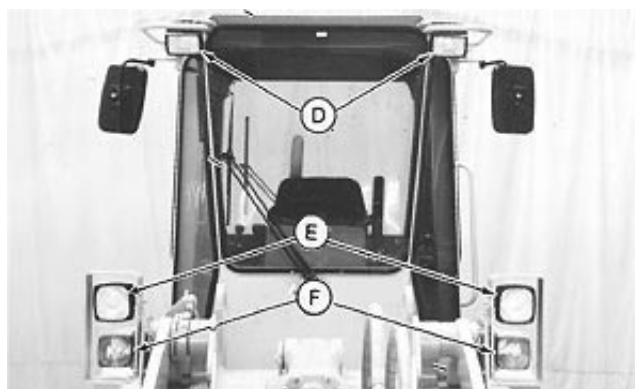
Press light switch (B). Lights (D and G) will come on.

Press turn signal switch to left or right position. One turn indicator light on monitor, if equipped, will be on. One front amber light (F) and one rear amber light (H) will be flashing.

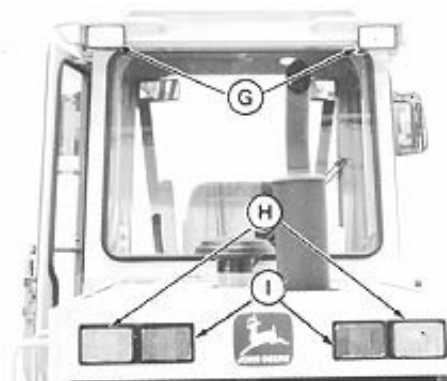
Press hazard light switch (C). Both front amber lights (F) and both rear amber lights (H) will be flashing.



T8373BD -UN-02DEC94



T7773AX -UN-10AUG92



T7773AY -UN-10AUG92

- A—Operating Light Switch
- B—Work Light Switch
- C—Hazard Light Switch
- D—Front Work Lights—If Equipped
- E—Headlights
- F—Turn Signals/Hazard Lights
- G—Rear Work Lights—If Equipped
- H—Turn Signals/Hazard Lights
- I—Tail Lights/Brake Lights

TX,10,DH2144 -19-29NOV94-1/1

HEATING AND AIR CONDITIONING CONTROLS

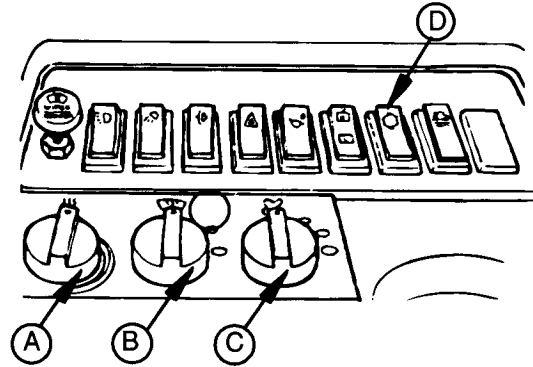
NOTE: Open valve (E) before operating heater.

Turn temperature control knob (A) clockwise to increase temperature.

Turn defroster blower knob (B) clockwise to increase blower speed. (Knob also turns on heater blower.) Blower has three speeds.

IMPORTANT: Before you start air conditioner first time in the season, check filters and condenser. Clean them if necessary. Check refrigerant level. (See Maintenance chapter.)

Press air conditioning switch (D) and turn blower knob (C) clockwise to increase blower speed in rear vents to operate air conditioning. Blower has three speeds.



544G Shown

- A—Temperature Control Knob
- B—Defroster Blower Knob
- C—Blower Knob
- D—Air Conditioning Switch
- E—Heater Valve

T8373AY -JUN-02DEC94

T100706 -JUN-22MAR96

TX,10,JC1103 -19-18MAR96-1/1

ADJUSTING SUSPENSION SEAT

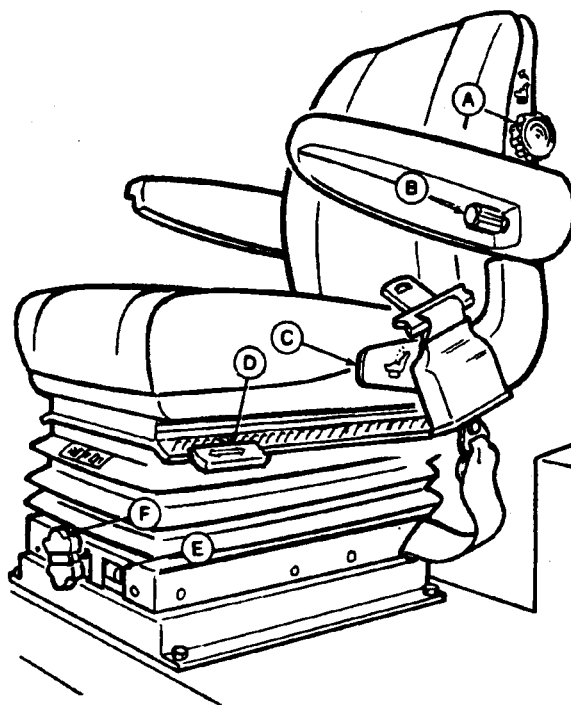


CAUTION: You can lose control of machine and be injured if seat is loose. Be sure seat is properly locked in position before operating the machine.

- Suspension seat is equipped with a weight adjustment feature of 50—130 kg (110—285 lb). Turn knob (F) to adjust seat to weight of the operator. Weight is displayed in window (E). Turn knob clockwise for a heavier operator and counterclockwise for a lighter operator.
- Turn knob (A) to make lumbar adjustment. Turn knob counterclockwise to move backrest cushion forward against operator's back. Turn knob clockwise to move lower cushion forward against operator's back.
- Turn knob (B) clockwise to raise tilt of armrest. Turn knob counterclockwise to lower tilt of armrest.
- Lift lever (C) to tilt backrest cushion forward or rearward. Keep weight off seat when making this adjustment. Release lever to lock in place.
- Lift lever (D) to move seat forward or rearward. Release lever and slide seat to lock in place.



CAUTION: Seat can move rapidly and may cause an injury. DO NOT put your full weight on seat while adjusting height.



- A—Lumbar Depth Adjustment Knob
 B—Armrest Tilt Adjustment Knob
 C—Backrest Tilt Adjustment Knob
 D—Fore-Aft Adjustment Lever
 E—Window
 F—Weight Adjustment Knob

T7829AP -UN-31AUG92

TX,10,JC246 -19-29NOV94-1/2

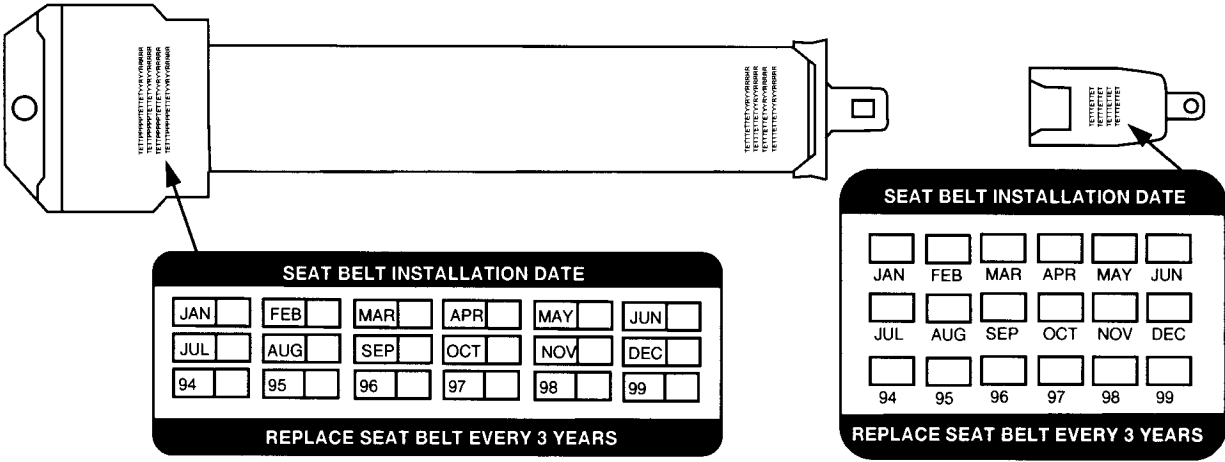
To raise seat, stand over seat, grasp at bottom edge of seat cushion, and slowly lift; each click is a position. To lower seat, lift as high as possible and release. Seat will return to lowest position.



T6782AF -UN-19OCT88

TX,10,JC246 -19-29NOV94-2/2

SEAT BELT



T8415AA -UN-09FEB95

Seat belt and mounting hardware must be inspected for wear or damage before operating the machine. Replace the belt or mounting hardware if worn or damaged.

Replace the complete seat belt assembly every three years regardless of appearance. A date label, to determine the age of the belt, is attached to each belt.

MODTX10DH3548 -19-07FEB95-1/1

STORAGE COMPARTMENT

Store operator's manual and tools in storage compartment (A) (located under seat). Door can be locked with the ignition key.



T8029AK -UN-15JUN93

TX,10,DH2961 -19-18JUN93-1/1

Break-in

ENGINE BREAK-IN OIL

New engines are filled at the factory with John Deere ENGINE BREAK-IN OIL. During the break-in period, add John Deere ENGINE BREAK-IN OIL as needed to maintain the specified oil level.

Change the oil and filter after the first 100 hours of operation of a new or rebuilt engine.

After engine overhaul, fill the engine with John Deere ENGINE BREAK-IN OIL.

If John Deere ENGINE BREAK-IN OIL is not available, use a diesel engine oil with oil viscosity based on the expected air temperature range, and meeting one of the following, during the first 100 hours of operation:

- API Service Classification CE
- CCMC Specification D4

After the break-in period, use John Deere PLUS-50[®] oil or other diesel engine oil as recommended in this manual.

IMPORTANT: Do not use John Deere PLUS-50[®] oil or engine oils meeting API CG4, API CF4, or CCMC D5 performance levels during the first 100 hours of operation of a new or rebuilt engine. These oils will not allow the engine to break-in properly.

TX,15,JC1131 -19-21MAY96-1/1

EVERY 10 HOURS OR DAILY

1. Perform 10 hour or daily service. (See Maintenance—Every 10 Hours or Daily chapter.)
2. Watch for fluid leaks.
3. Lubricate working tool pivots every 10 hours for first 100 hours and when working in mud and water.

TX,15,DH1800 -19-06JUN91-1/1

AFTER FIRST 10 AND FIRST 50 HOURS

Tighten wheel retainer cap screws to 542 N•m (400 lb-ft).

TX,15,DH1828 –19–16JUN93–1/1

AFTER THE FIRST 100 HOURS

1. Check hardware torque. (See Hardware Torque Specifications in Maintenance chapter.)
2. Perform 100 hours service. (See Maintenance—Every 100 Hours chapter.)
3. Change engine oil and filter. (See Maintenance—Every 250 Hours chapter.)
4. Change hydraulic reservoir return filter. (See Maintenance—Every 500 Hours chapter.)
5. Change transmission oil and filter. (See Maintenance—Every 1000 Hours chapter.)
6. Change differential oil. (See Maintenance—Every 3000 Hours chapter.)
7. Change differential lock return filter(s)—if equipped. (See Maintenance—Every 3000 Hours chapter.)

TX,15,DH2147 –19–16JUN93–1/1

Pre-Start Inspection

INSPECT MACHINE DAILY BEFORE STARTING

Do periodic service checks in the Maintenance—Every 10 Hours or Daily chapter.

A-Check wheels (front and rear) for loose or missing hardware.

B-Clean operator's station.

C-Check air inlet cover.

D-Clean radiator.

E-Check fuel level.

F-Check tires (front and rear).

ELECTRICAL SYSTEM: Check for worn or frayed wires and loose or corroded connections.

BOOM, BUCKET, SHEET METAL: Check for bent, broken, loose, or missing parts.

HARDWARE: Check for loose or missing parts.

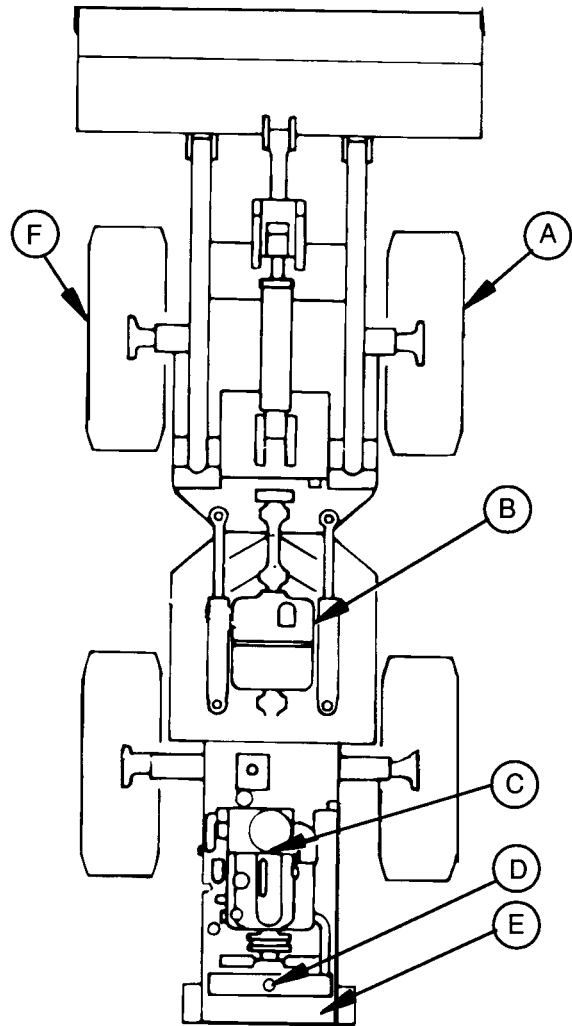
PARK BRAKE: Check for correct operation.

HYDRAULIC SYSTEM: Check for leaks, missing or loose clamps, kinked hoses, and lines or hoses that rub against each other or other parts.

LUBRICATION: Check lubrication points shown on Periodic Maintenance Chart.

PROTECTIVE DEVICES: Check guards, shields, ROPS, covers, seat belt.

SAFETY: Walk around machine to clear all persons from machine area.



T8374AB -UN-02DEC94

Operating the Engine

CHECK INSTRUMENTS BEFORE STARTING

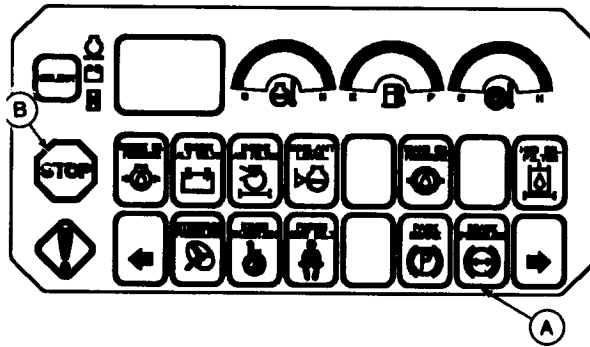
Turn key switch clockwise to ON position.

All indicator lights must light. If any indicator light fails to light, the bulb may be burned out. If bulb is not burned out, but indicator light still fails to light, see your authorized dealer.

TX,25,DH2148 -19-22JUN93-1/1

BRAKE PRESSURE INDICATOR

The brake pressure indicator light (A), STOP indicator light (B), and audible alarm may come on during initial start-up, but must be off during normal operation. DO NOT operate machine if the lights remain on. See your authorized dealer.



T7739AJ -UN-30JUL92

TX,25,DH2149 -19-22JUN93-1/1

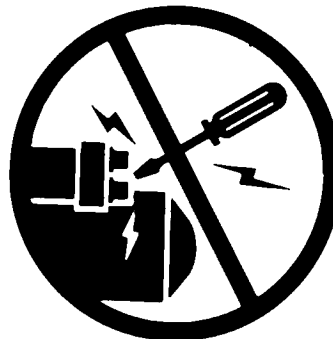
STARTING THE ENGINE

CAUTION: Avoid possible injury or death from a runaway machine.

DO NOT start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission control lever in neutral "N". Engage park brake.

Use of seat belt with roll-over protective structure (ROPS) is recommended under all operating conditions.

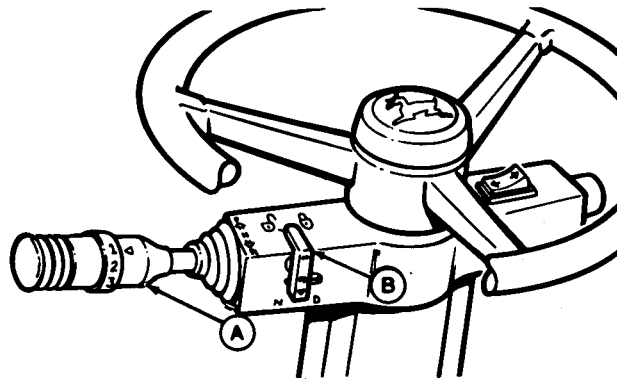


TS177 -UN-11JAN89

1. Fasten seat belt.
2. Sound the horn.

TX,25,DH2284 -19-31JUL92-1/3

3. Move transmission control lever (A) to neutral "N".
Engage neutral lock (B).



T7747BR -UN-19MAY92

TX,25,DH2284 -19-31JUL92-2/3

4. Hold accelerator pedal (C) down 1/3 of the way to the floor.
5. Turn key switch to ON position. Push horn button to sound horn.

IMPORTANT: Never operate starter motor for more than 20 seconds at a time. If engine fails to start after two or three tries, return key switch to STOP position. Wait for about 2 minutes, then try again.

After a false start, DO NOT turn key switch until engine stops or starter may be damaged.

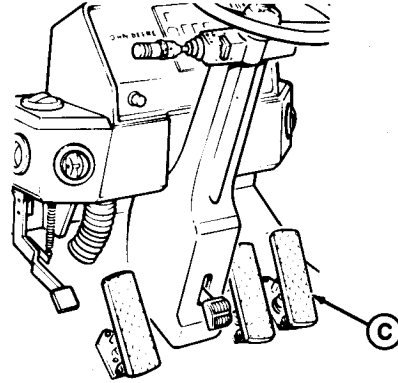
Engine will not start by towing or pushing. Permanent damage to transmission will result.

6. Turn key switch to START position. DO NOT crank engine more than 20 seconds. Wait 2 minutes before trying again. Release key when engine starts.

IMPORTANT: If STOP indicator light does not go out within 10 seconds after starting engine, STOP THE ENGINE. Find and correct the cause.

7. Operate machine at less than normal loads and at slow idle speed until engine warms up.

IMPORTANT: If engine stops when operating under load, remove load. Restart engine immediately. Run 30 seconds at 1/2 speed before adding load.



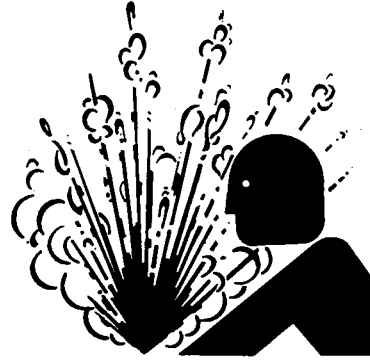
T7747BU -UN-19MAY92

STARTING FLUID—IF EQUIPPED (COLD WEATHER STARTING AID)

USE STARTING FLUID



CAUTION: Prevent possible injury from exploding container. Starting fluid is highly flammable. Keep container away from heat, sparks, and open flame. Contents are pressurized. **DO NOT** puncture or incinerate container. Remove container from machine if engine does not need starting fluid.



TS281 -UN-23AUG88

IMPORTANT: Prevent damage to engine. Use starting aid when temperatures are below 4°C (40°F) and only when engine is **COLD**.

1. Turn key switch clockwise to **START** position.

TX,25,JC1155 -19-03JUN96-1/2

IMPORTANT: Excess starting fluid could damage engine; press starting aid button only when engine is cold and cranking. Starting aid fluid is being injected into engine as long as you press button.

2. After one or two revolutions of engine crankshaft, press starting aid button (A) at short intervals. Crank engine for 20 seconds maximum, then allow 2 minutes between cranking periods.

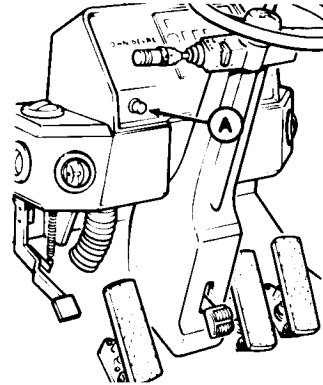
REPLACING STARTING AID CAN

1. Turn container (B) counterclockwise to remove the container and starting aid can.
2. Remove safety cap and spray button from new can.
3. Place new can in container.
4. Turn container clockwise in starting aid base (C) to install starting aid can.

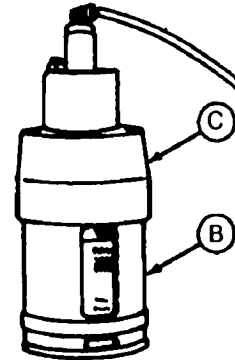
OPERATING MACHINE WITHOUT STARTING AID CAN INSTALLED

IMPORTANT: Protect starting aid components from possible damage. Install the starting aid can container upside down.

Remove container from base, turn upside down, and reinstall.



T7527EF (CV)



T7747BT -UN-19MAY92

T7527EF -UN-01AUG91

TX,25,JC1155 -19-03JUN96-2/2

USING COOLANT HEATER—IF EQUIPPED

CAUTION: Prevent possible injury from fire from an overheated electrical cord. Use a heavy-duty, grounded cord to connect heater to electrical power.

Connect the coolant heater to 115-volt electrical power 10 hours before you start the engine.

T82,25,C53 -19-03DEC91-1/1

USING BOOSTER BATTERIES—12 VOLT SYSTEM

Before boost starting, machine must be properly shut down and secured to prevent unexpected machine movement when engine starts.

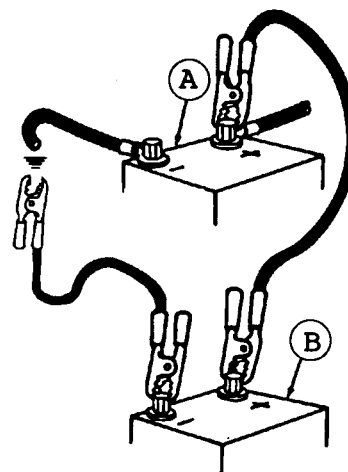
CAUTION: An explosive gas is produced while batteries are in use or being charged. Keep flames or sparks away from the battery area. Make sure the batteries are charged in a well ventilated area.

IMPORTANT: The machine electrical system is a 12-volt negative (-) ground. Use only 12-volt booster batteries.

NOTE: Machine can be equipped with one or two 12-volt batteries.

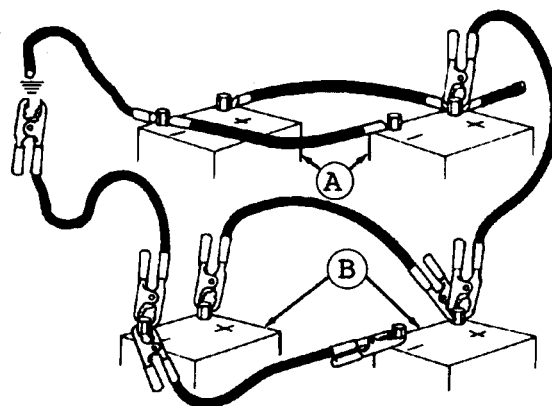
1. Turn battery disconnect switch OFF, if equipped.
2. Connect booster batteries as shown. Make ground connection to frame last.
3. Turn battery disconnect switch ON, if equipped.

A—Machine Battery (12-volt)
B—Booster Battery (12-volt)



T6508AE1 (CV)

T6508AE1 -UN-24OCT91



T6713AI1 (CV)

T6713AI1 -UN-24OCT91

CHECK INSTRUMENTS AFTER STARTING



CAUTION: Prevent possible injury, or machine damage. If STOP indicator light does not go out within 10 seconds after starting engine, STOP THE ENGINE. Find and correct the cause.

Cold oil may cause hydraulic oil filter restriction indicator light to come on temporarily.

Turn signal and park brake lights will come on if the function is engaged.

Engine coolant temperature gauge will flash until temperature reaches 38°C (100°F).

Fuel gauge first arrow will flash if fuel is low.

TX,25,DH2550 -19-12MAY93-1/1

WARM-UP

Operate machine at less-than-normal loads and speeds for first few minutes until temperatures and pressures reach normal operating range.

TX,25,JC247 -19-29NOV94-1/1

COLD WEATHER WARM-UP

IMPORTANT: If hydraulic oil is cold, hydraulic functions move slowly. Do not attempt normal loader operation until hydraulic functions move at close-to-normal cycle times.

1. Run engine at 1/2 speed for 5 minutes.
2. Cycle boom and bucket functions until functions move at normal speed.

TX,DH,40 -19-17JUN91-1/1

STOPPING THE ENGINE

IMPORTANT: Prevent possible engine damage. If engine stops when operating under load, remove load. Restart engine immediately. Run 30 seconds at 1/2 speed before adding load.

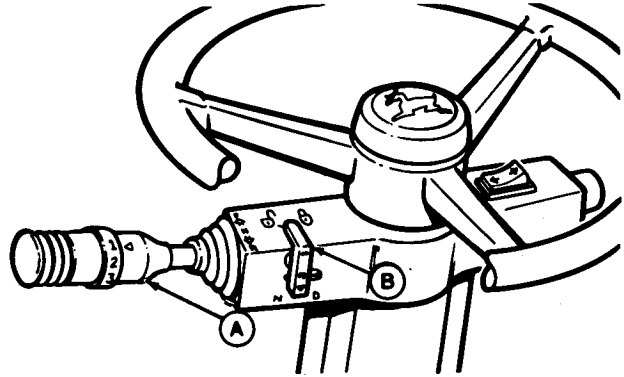
1. Park machine on level surface.
2. Lower bucket to ground.

TX,25,DH2168 -19-16JUN93-1/2

3. Move transmission control lever (A) to neutral "N". Engage neutral lock (B).



CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.



T7747BR -UN-19MAY92

4. Engage park brake.

IMPORTANT: Turbocharger may be damaged if engine is not properly shut down.

5. Run engine at 1/2 speed for 2 minutes before stopping, to avoid damage to turbocharger. Release accelerator pedal to slow idle.
6. Turn key switch to STOP.
7. Turn battery disconnect switch OFF, if equipped.

TX,25,DH2168 -19-16JUN93-2/2

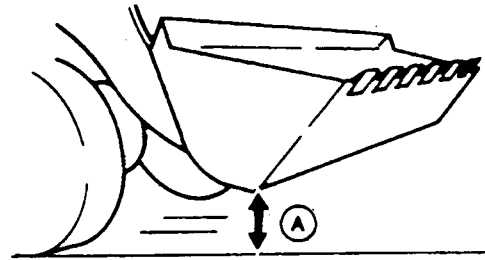
Driving the Machine

DRIVING ON PUBLIC ROADS

Before driving on public roads, check state and local laws that may apply to tractors, self-propelled machines, and towed equipment. Additional lights, mirrors, SMV emblems, or reflectors may be required.

TX,30,DH2123 -19-31JUL92-1/2

For best visibility and stability, raise bucket approximately 406 mm (16 in.) (A) and tilt it back completely.



T6458AN1 -UN-25OCT88

TX,30,DH2123 -19-31JUL92-2/2

GENERAL DRIVING PRECAUTIONS



CAUTION: Riders on machine are subject to injury. Never allow riders on the machine.

In general observe all safe driving rules such as:

- Slowing down for curves
- Avoiding rapid steering or braking
- Slowly stopping machine with flat tire
- Watching out for bystanders
- Watching out for other operators
- Driving up a slope in forward and backing down in reverse
- Looking behind before backing up

When carrying loads up or down a steep hill, use extreme caution. Use a safe speed. Keep bucket in low position. Use right brake for stopping.

02T,30,C47 -19-31JUL92-1/1

FRONT AXLE DISCONNECT—IF EQUIPPED

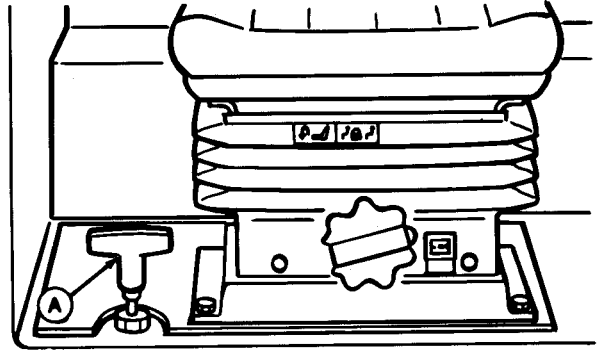
IMPORTANT: Prevent possible axle or transmission damage. DO NOT connect or disconnect front axle with machine in motion. Start the engine. Turn steering wheel slowly back and forth to connect or disconnect.

Disconnect the front axle before driving on hard surface roads.

TX,30,DH2169 -19-31JUL92-1/2

Pull up lever (A) to disconnect front axle.

Push down lever to connect front axle.



T7747AN -UN-19MAY92

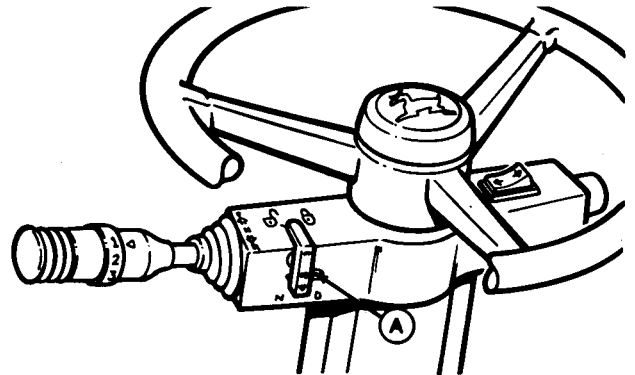
TX,30,DH2169 -19-31JUL92-2/2

NEUTRAL LOCK



CAUTION: Prevent possible injury from unexpected machine movement. Always move transmission control lever to neutral "N", and engage neutral lock before starting or dismounting.

Move neutral lock (A) to the locked position to engage neutral lock. Move lock to the unlocked position to disengage neutral lock.



T7747BI -UN-19MAY92

TX,30,DH2170 -19-02OCT92-1/1

SHIFTING THE TRANSMISSION

Unlock neutral lock.

TX,30,JC248 -19-29NOV94-1/2

Change direction of machine by moving transmission control lever (A) to forward "F" or reverse "R" position.

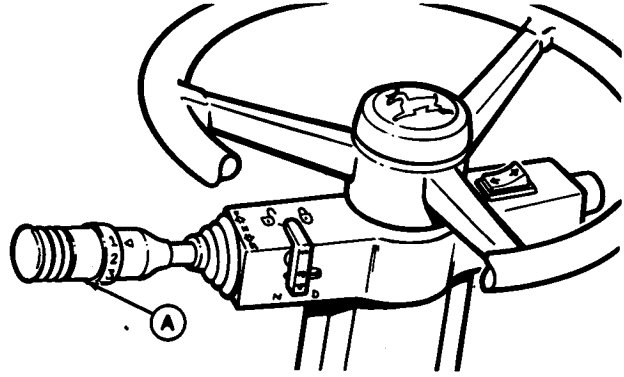
Change speed of machine by moving transmission control lever to desired gear. Machine has four forward gears and three reverse gears. Shifting to 4th gear reverse will give same travel speed as 3rd gear reverse. Select a gear suitable to operating and road conditions.

When transmission control lever is positioned in 4th gear, transmission is in "automatic" mode. In "automatic" mode, transmission starts out in 2nd gear, then shifts to 3rd and 4th gear as speed increases. It will also automatically downshift from 4th to 3rd to 2nd gear as speed decreases.

IMPORTANT: Prevent possible transmission damage. DO NOT change forward and reverse directions at high speeds.

If speed is less than 7 mph, a direction change can be made in any gear. If speed is greater than 7 mph, transmission will automatically shift down to 2nd gear prior to changing directions.

Forward and reverse directions can be changed without stopping the machine in 1st and 2nd gears.



T7747AM -UN-19MAY92

TX,30,JC248 -19-29NOV94-2/2

TRAVEL SPEEDS

NOTE: Km/h and mph will only display in full increments on digital display.

544G, LL, TC:					
Forward Speeds	km/h	mph	Reverse Speeds	km/h	mph
1	0—7.4	0—4.6	1	0—7.4	0—4.6
2	0—12.3	0—7.7	2	0—12.3	0—7.7
3	0—27.2	0—16.9	3	0—27.2	0—16.9
4	0—38.4	0—23.8			
624G:					
Forward Speeds	km/h	mph	Reverse Speeds	km/h	mph
1	0—7.3	0—4.5	1	0—7.3	0—4.5
2	0—11.6	0—7.2	2	0—11.6	0—7.2
3	0—24.5	0—15.2	3	0—24.5	0—15.2
4	0—37.3	0—23.0			
644G:					
Forward Speeds	km/h	mph	Reverse Speeds	km/h	mph
1	0—7.0	0—4.4	1	0—7.0	0—4.4
2	0—11.2	0—7.0	2	0—11.2	0—7.0
3	0—22.0	0—13.7	3	0—22.0	0—13.7
4	0—34.6	0—21.5			

TX,30,DH2172 -19-02OCT92-1/1

RIDE CONTROL SWITCH—IF EQUIPPED

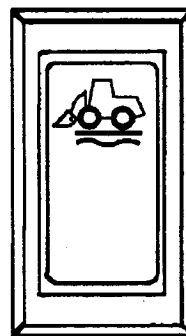
CAUTION: Prevent possible injury from unexpected boom movement. The bucket may "jump up" when ride control switch is turned ON.

Turn ride control switch ON to improve machine ride and reduce tire flexing when traveling over rough terrain at a high speed with loaded bucket.

If engine is stopped with ride control switch in ON position, ride control is automatically disengaged. Start the engine, press switch to OFF and then back to ON to engage ride control. Switch will be backlit when engaged (ON).

To discharge the energy in the ride control accumulator, do the following:

1. Make sure area around bucket is clear.
2. Lower bucket to ground.
3. Stop engine.
4. Turn key switch to ON.
5. Move hydraulic control lever to float detent position.
6. Cycle ride control switch from OFF to ON.
7. Push boom down switch to release accumulator pressure.



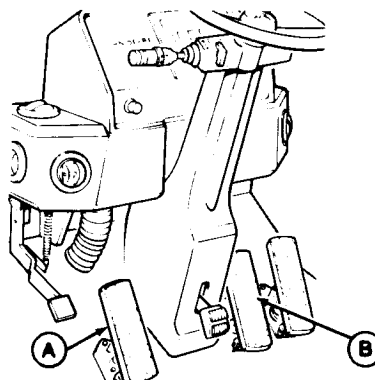
T7829AV -JUN-08SEP92

TX,30,DH2505 -19-16JUN93-1/1

STOPPING THE MACHINE

Depress left brake pedal (A) or right brake pedal (B) to stop the machine.

Left brake pedal also serves as a clutch cut-off pedal when clutch cut-off switch is in "clutch disengaged" position.



T7747BS -JUN-19MAY92

TX,30,DH2173 -19-31JUL92-1/1

PARK BRAKE SWITCH



CAUTION: Prevent possible injury or death from machine runaway. Before disengaging park brake, be sure engine is running and service brakes are operational.

NOTE: Transmission clutches are disengaged when park brake is applied.

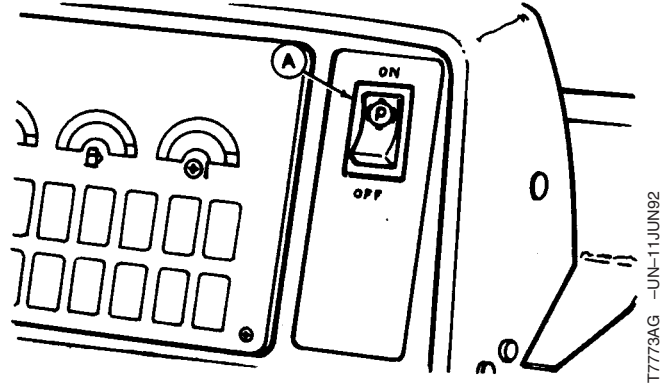
Press park brake switch (A) to ON position to engage park brake.

Press park brake switch to OFF position to disengage park brake.

NOTE: If park brake is engaged when engine is running and transmission control lever is in neutral "N", park brake indicator light will light.

If park brake is engaged when engine is running and transmission control lever is moved to forward "F", or reverse "R", park brake indicator light will light, STOP indicator light will light, and alarm will sound.

If engine is stopped with park brake switch in OFF position, park brake is automatically applied. Press park brake switch to ON and then back to OFF to release park brake after starting engine.



TX,30,DH2174 -19-06OCT92-1/1

PARKING THE MACHINE

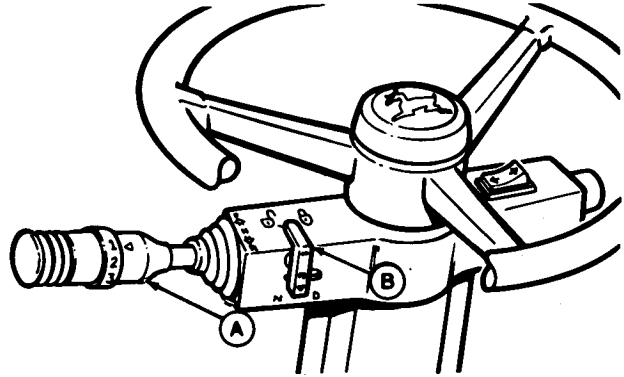
1. Park machine on a level surface.
2. Lower bucket to ground.

TX,30,DH2176 -19-16JUN93-1/2

3. Move transmission control lever (A) to neutral "N". Engage neutral lock (B).



CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.



T7747BR -UN-19MAY92

4. Engage park brake.

IMPORTANT: Turbocharger may be damaged if engine is not properly shut down.

5. Run engine at 1/2 speed without load for 2 minutes before stopping, to avoid damage to turbocharger. Release accelerator pedal to slow idle.
6. Turn key switch to STOP.
7. Turn battery disconnect switch OFF, if equipped.

TX,30,DH2176 -19-16JUN93-2/2

Operating the Machine

BOOM AND BUCKET CONTROL LEVER— ONE LEVER DESIGN

Move control lever forward (A) to lower boom, or rearward (D) to raise boom.

NOTE: Boom down switch (I) must be pushed while moving control lever forward to lower boom with engine stopped.

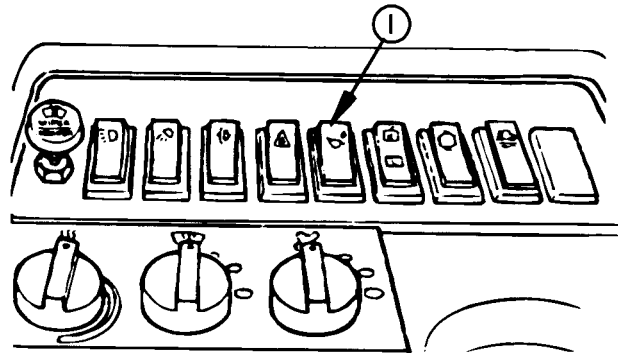
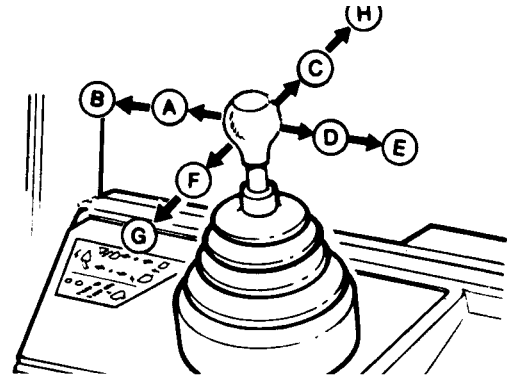
Move control lever left (F) to roll back bucket, or right (C) to dump bucket. 544G LL and 544G TC will also have a fast dump bucket position (H).

Float (lever in full forward detent position [B]): This position allows oil to flow in and out both ends of cylinders so the bucket can follow the contour of the ground. Manually release lever from this position.

Return-to-Dig (lever in full left detent position [G]): Bucket will return to set dig position.

Boom Height Kickout (lever in full rear detent position [E]): Lever will remain in this position until boom is at a pre-set height, then will return to neutral automatically.

Boom and bucket functions can be operated simultaneously by moving lever between positions. For example, to raise boom and roll back bucket, move lever between positions (D) and (F).



- A—Lower Boom
- B—Float
- C—Dump Bucket
- D—Raise Boom
- E—Boom Height Kickout
- F—Rollback Bucket
- G—Return-to-Dig
- H—Fast Bucket Dump
- I—Boom Down Switch

T7773AC -UN-11JUN92

T8373BA -UN-02DEC94

TX,35,DH2177 -19-29NOV94-1/1

BOOM AND BUCKET CONTROL LEVER— TWO LEVER DESIGN

Move left control lever forward (A) to dump bucket, or rearward (B) to roll back bucket. 544G LL and 544G TC will also have a fast dump bucket position (H).

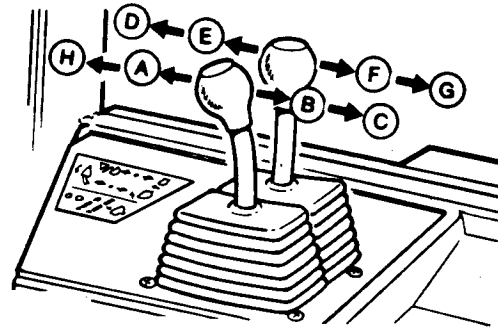
NOTE: Boom down switch (I) must be pushed while moving control lever forward to lower boom with engine stopped.

Move right control lever forward (E) to lower boom or rearward (F) to raise boom.

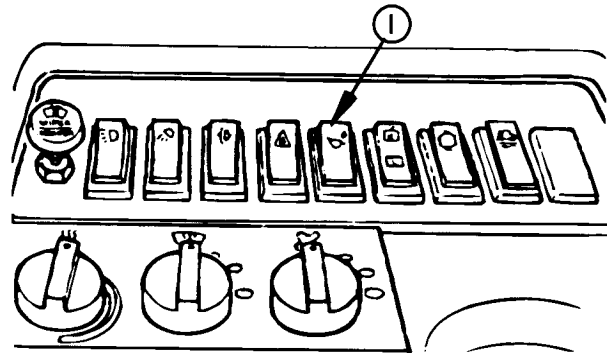
Float (right lever in full forward detent position [D]): This position allows oil to flow in and out both ends of cylinders so the bucket can follow the contour of the ground. Manually release lever from this position.

Return-to-Dig (left lever in full rearward detent position [C]): Bucket will return to set dig position.

Boom Height Kickout (right lever in full rearward detent position [G]): Lever will remain in this position until boom is at a pre-set height, then will return to neutral automatically.



T7773AE -UN-11JUN92



T8373BA -UN-02DEC94

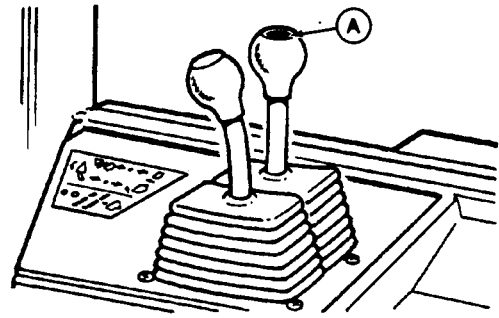
- A—Dump bucket
- B—Rollback Bucket
- C—Return-to-Dig
- D—Float
- E—Lower Boom
- F—Raise Boom
- G—Boom Height Kickout
- H—Fast Bucket Dump
- I—Boom Down Switch

QUICK SHIFT SWITCH

Press down on switch (A) to downshift from 3rd gear to 2nd gear when transmission control lever is positioned in 3rd gear. Press again to return to 3rd gear.

Press down on switch to downshift from 2nd gear to 1st gear when transmission control lever is positioned in 2nd gear. Press again to return to 2nd gear.

Quick shift will not function in 4th gear.



T7773CE -UN-21AUG92

TX,35,DH2490 -19-08OCT92-1/1

QUICK COUPLER OPERATION—544G TC

Move control lever forward (A) to lower boom, or rearward (B) to raise boom.

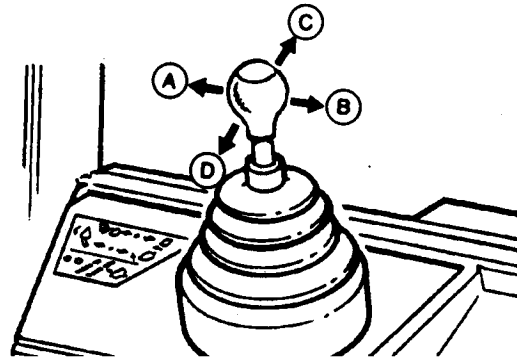
NOTE: Boom down switch must be pushed while moving control lever forward to lower boom with engine stopped.

Move control lever left (D) to tilt coupler rearward. Move it right (C) to tilt coupler forward.

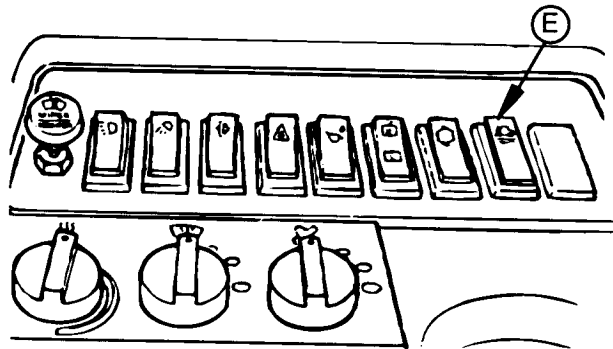
1. Align equipment to be used so hooks fit over coupler and eyelet is centered.
2. Push down and hold pin disconnect switch (E) to retract connecting pins when engaging equipment.
3. Roll coupler back to align pins with attachment. Release switch to lock pins in place.

Boom and tilt functions can be operated simultaneously by moving lever between positions. For example, to raise boom and tilt coupler rearward move lever between positions (B and D).

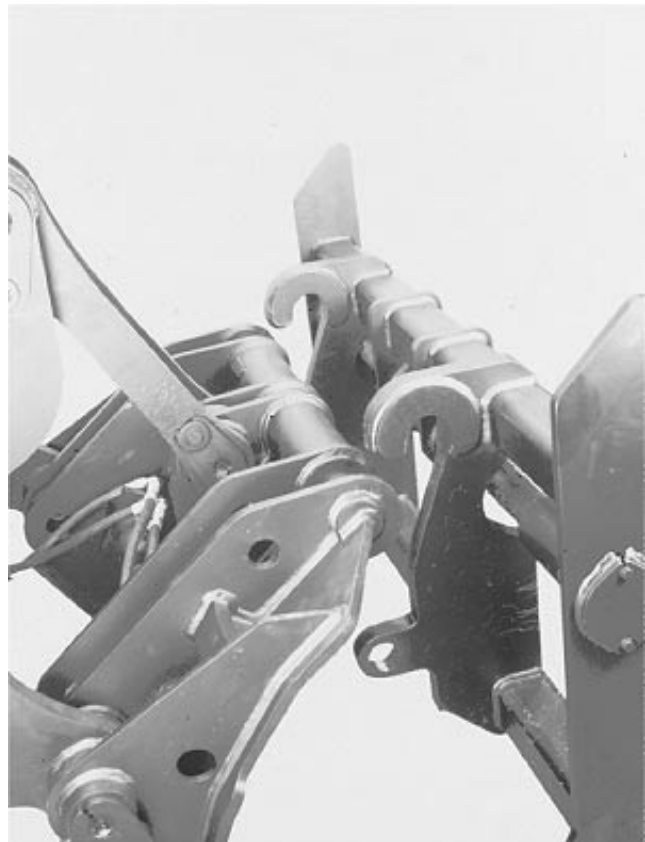
A—Lower Boom
B—Raise Boom
C—Tilt Forward
D—Tilt Rearward
E—Pin Disconnect Switch



T7773AF -UN-11JUN92



T8373AV -UN-02DEC94



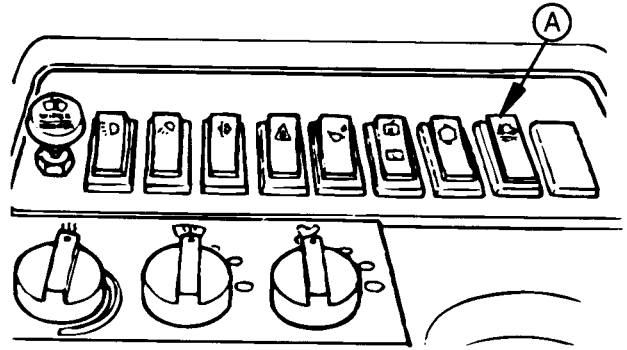
T6975AF -UN-29MAR89

PIN DISCONNECT SWITCH—544G TC

Use the pin disconnect switch (A) when adding or changing equipment.

Hold down switch to retract pins on coupler.

Release switch to extend and lock pins in place.

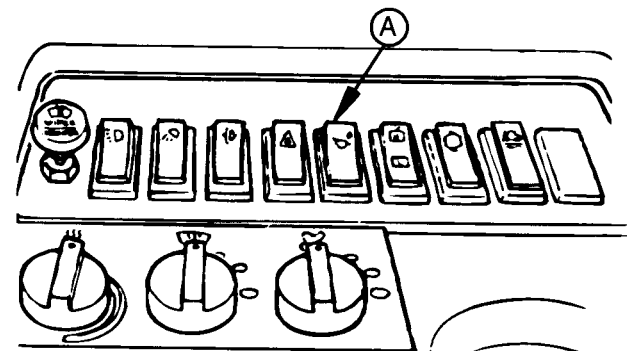


T8373AW -UN-02DEC94

TX,35,DH2287 -19-29NOV94-1/1

BOOM DOWN SWITCH

Push boom down switch (A) while moving control lever forward to lower boom with the engine stopped.



T8373AX -UN-02DEC94

TX,35,DH2179 -19-29NOV94-1/1

CLUTCH CUT-OFF SWITCH—IF EQUIPPED

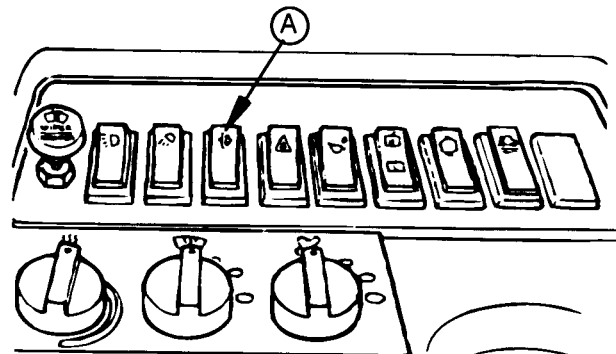


CAUTION: Prevent possible injury from unexpected machine movement. When stopping on inclines, push clutch cut-off switch to engaged position before releasing left service brake. This will prevent the machine from rolling downhill during transmission re-engagement cycle.

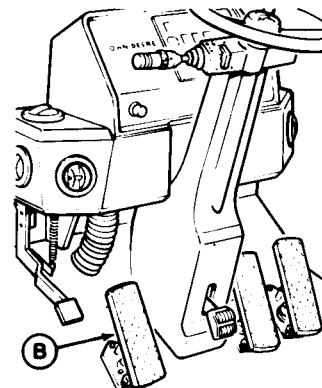
The clutch cut-off switch (A) must be in clutch disengaged position before left brake pedal (B) can be used to disengage transmission clutches. Move switch up to clutch disengaged position.

Use the clutch cut-off switch in situations such as truck loading where machine positioning and maximum hydraulics are needed.

NOTE: The park brake will also disengage the transmission clutches. Release park brake before operating.



T8373AZ -UN-02DEC94



T7747BY -UN-19MAY92

TX,35,DH2180 -19-29NOV94-1/1

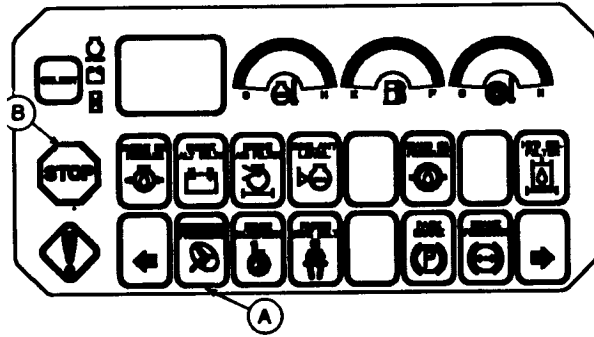
SECONDARY STEERING—IF EQUIPPED

IMPORTANT: Prevent possible damage to secondary steering system. Stop machine immediately if steering pressure indicator light and audible alarm come on while operating. **THE SECONDARY STEERING SYSTEM IS NOT INTENDED FOR CONTINUOUS USE.**

Steering pressure indicator light (A) will light, STOP indicator light (B) will flash, and audible alarm will sound when secondary steering system is activated. The light indicates low hydraulic pressure resulting from mechanical malfunction, such as loss of engine power. An electrically driven pump will actuate to provide steering

The secondary steering system will function only when key switch is on.

NOTE: *Secondary steering is activated if you try to start the machine unsuccessfully. Turn key switch off to stop secondary steering motor.*



T7773AT -UN-30JUL92

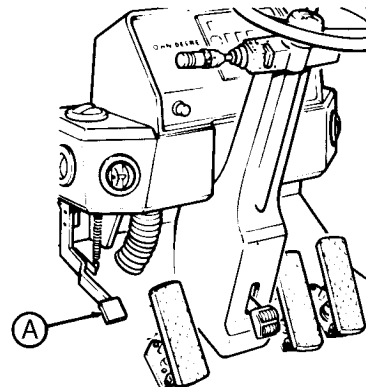
TX,35,DH2181 -19-02OCT92-1/1

DIFFERENTIAL LOCK PEDAL—IF EQUIPPED

Hold pedal (A) down to lock front axle differential.

Release pedal to unlock differential.

NOTE: *Use differential lock only when conditions require traction. Avoid using differential lock when steering.*



T100664 -UN-12MAR96

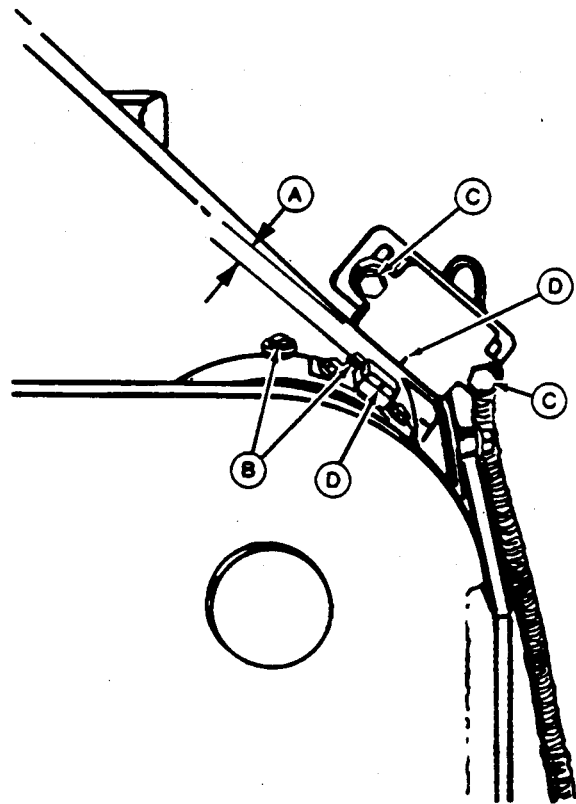
TX,35,DH2182 -19-02OCT92-1/1

ADJUSTING BOOM HEIGHT KICKOUT—IF EQUIPPED

1. Start engine.
2. Move control lever to boom raise detent position and release.

TX,35,DH2183 -19-31JUL92-1/2

3. After control lever returns to neutral, make a mark (D) on the magnet and the boom height kickout switch.
4. Position the boom in the desired boom height kickout position. Stop engine.
5. Loosen cap screws (B) and slide bracket to align marks on magnet and boom kickout switch.
6. Loosen cap screws (C) and adjust clearance (A) between magnet and boom height kickout switch to 9 ± 3 mm (0.35 ± 0.12 in.).
7. Check boom height kickout for correct adjustment.



A—Clearance
B—Cap Screws
C—Cap Screws
D—Mark

T6601A1 -UN-21OCT88

TX,35,DH2183 -19-31JUL92-2/2

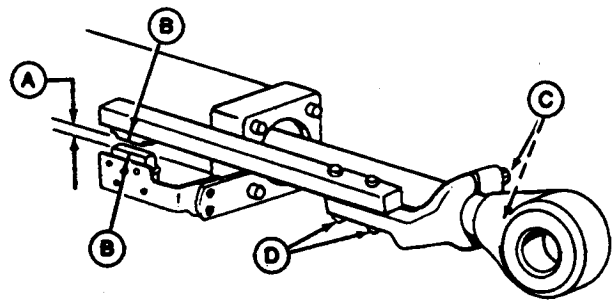
ADJUSTING RETURN-TO-DIG

1. Start engine.
2. Move control lever to return-to-dig detent position and release.

TX,35,DH2184 -19-02OCT92-1/2

NOTE: On 544G LL and 544G TC, the return-to-dig switch and magnet are located below the cylinder.

3. After control lever returns to neutral, make a mark (B) on magnet and return-to-dig switch.
4. Position the boom and bucket in the desired return-to-dig position. Stop engine.
5. Loosen cap screws (D) and slide bar to align marks on magnet and return-to-dig switch.
6. Loosen cap screws (C) and adjust clearance (A) between magnet and return-to-dig switch to 9 ± 3 mm (0.35 ± 0.12 in.).
7. Raise boom. Cycle bucket from full rollback to dump. Check return-to-dig for correct adjustment.



A—Clearance
B—Mark
C—Cap Screws
D—Cap Screws

T6599AD -UN-21OCT88

TX,35,DH2184 -19-02OCT92-2/2

GENERAL OPERATING TIPS

Carry loaded bucket low to the ground for a better view and to improve machine stability.

Keep the bottom of the bucket parallel to the ground when dozing. DO NOT doze with the bucket in dump position.

Use bucket teeth when digging in hard material.

When bucket digs in, decreasing traction, roll bucket back slightly.

In float position, the bucket will follow the contour of the ground. Use float position to back drag.

Clean and level the work area while waiting for truck.

If possible, keep wind at your back while dumping load, for improved viewing and to keep dust away from engine.

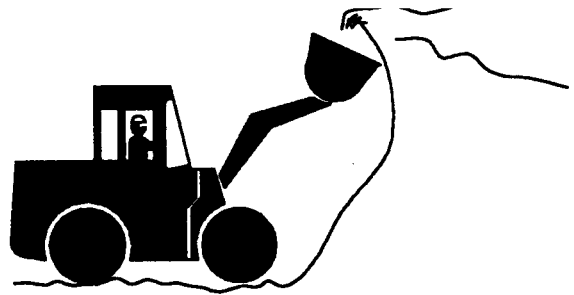
TX,DH,49 -19-06JUN91-1/1

EXCAVATING BANKS OR STOCKPILES



CAUTION: Prevent possible injury from falling material. Remove overhanging material first from top of bank or stockpile .

Remove any overhang before starting to dig at the base of a bank or stockpile. This can be done with the bucket.



T7747BE -UN-19MAY92

TX,35,DH2276 -19-02OCT92-1/3

Reduce bucket breakout force required when digging into a bank or stockpile of hard, dense, or tightly-packed material by working from the top of bank or stockpile to the bottom.



T7747BF -UN-19MAY92

TX,35,DH2276 -19-02OCT92-2/3

Normally, a bank or stockpile is excavated from the bottom and then up the side. Work the face of the bank or stockpile evenly to prevent outcroppings and overhangs.

Work bank or stockpile with machine at a 90° angle to the bank or stockpile.

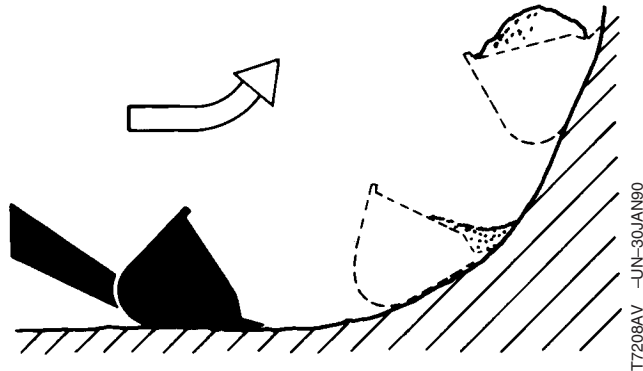
1. Position bucket on the ground in return-to-dig position.
2. Move transmission control lever to 1st or 2nd gear depending on ground conditions.

In loose material, use 2nd gear for better traction. Use 1st gear for better bucket fill.

3. Move forward into the bank or stockpile.

NOTE: Use differential lock as necessary.

4. Raise and curl bucket as bucket fills.



T7208AV -UN-30JAN90

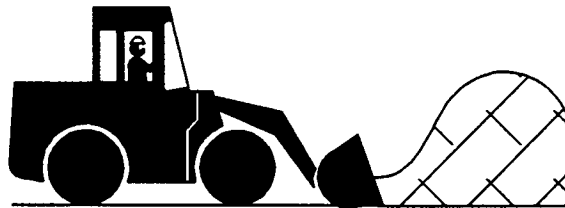
TX,35,DH2276 -19-02OCT92-3/3

USING THE LOADER BUCKET

1. Place bucket in the return-to-dig position and lower to ground.

NOTE: Bucket and boom can be positioned while machine is on-the-go.

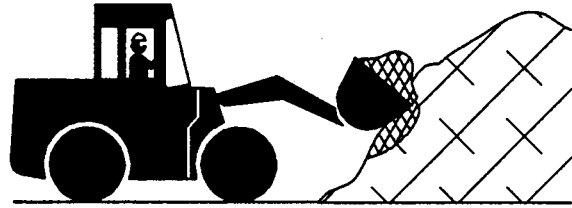
2. Move transmission control lever to 1st or 2nd gear depending on ground condition.
3. Move forward into the material.



T7747BB -UN-19MAY92

TX,35,JC1049 -19-17JAN96-1/4

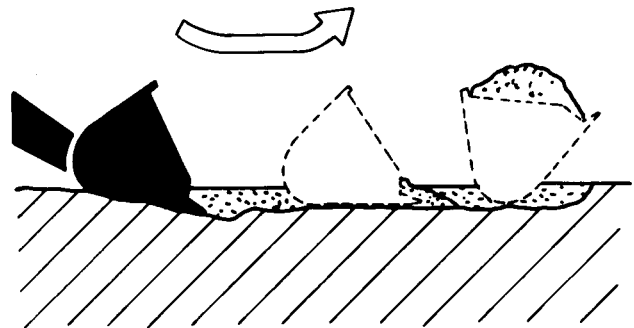
4. Raise and curl bucket to hold load.



T7747BC -UN-19MAY92

TX,35,JC1049 -19-17JAN96-2/4

EXCAVATING ON THE LEVEL: Position bucket at a slightly downward angle on ground (use bucket teeth for this type of digging).



T7208AR -UN-30JAN90

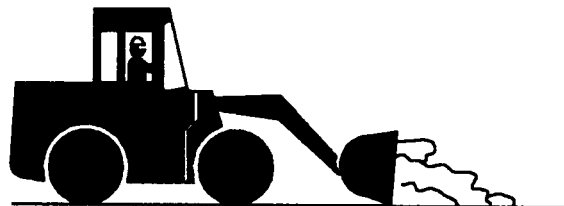
TX,35,JC1049 -19-17JAN96-3/4

IMPORTANT: Prevent possible damage to the bellcrank linkage. **DO NOT** bulldoze with bucket in dump position. When dozing, keep bucket bottom parallel to the ground.

DOZING: With bucket parallel to ground, remove as little dirt as possible from the top surface. Let dirt spill from partially dumped bucket to fill in low spots.

USING BOOM IN FLOAT POSITION: Place the boom in float position and bucket in return-to-dig position to prevent gouging the surface, as in cleaning concrete and snow removal. Also use float position to avoid mixing surface material with stockpile material.

DIGGING IN HARD, DENSE, OR TIGHTLY-PACKED MATERIAL: To break material loose, use a gentle up-and-down motion of the bucket.



T7747BD -UN-19MAY92

TX,35,JC1049 -19-17JAN96-4/4

BACKDRAGGING

Leveling and grading can be done with the boom in the float position by backdragging the loader bucket while traveling in reverse. (Float position allows the bucket to follow contour of the ground.)



T7747BG -UN-19MAY92

TX,35,DH2278 -19-31JUL92-1/1

BACKFILLING

There are two effective methods of backfilling.

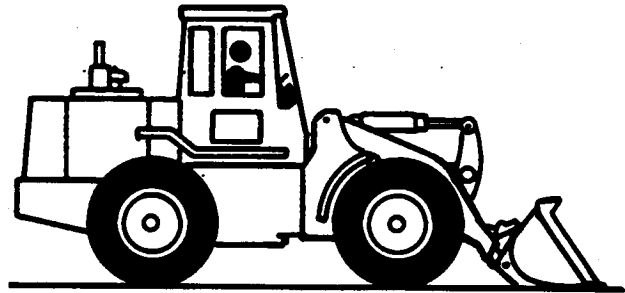
IMPORTANT: DO NOT bulldoze with bucket in the dump position, as damage could result to the bellcrank linkage. When dozing, keep bucket bottom parallel to the ground.

1. Use loader bucket as a dozer. As bucket approaches the trench, material being pushed will fall into the trench. Reverse direction and reposition loader to maintain a 90° angle to the trench line.
2. Push material to the trench as in method 1. Use clutch cut-off to maintain high engine rpm.

Dump material into the trench while placing direction selector lever in neutral.

When bucket is dumped, release clutch cut-off and reposition loader for a 90° angle to the trench line.

If filling, spread material in thin layers. Operate at nearly full rpm and dump material on-the-go. Reverse direction just prior to emptying bucket. Loader will compact fill material as it works.



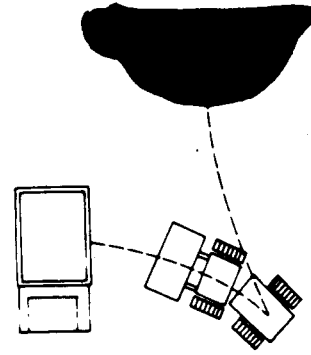
T6603AO -UN-20OCT88

TX,35,JC1064 -19-14FEB96-1/1

TRUCK LOADING

The most efficient technique for truck loading is the "V" method.

1. Level bucket and lower to the ground.
2. Run engine near fast idle to penetrate material.
3. Increase engine speed to fast idle and crowd into the pile.
4. As engine rpm starts to decrease, pull loader control lever back and to the left.
5. Feather hydraulics to obtain a smooth combination of bucket rollback and boom lift.
6. After filling the bucket, reverse loader and articulate 35—40 degrees. If truck is positioned close to the stockpile, raise boom to level position while reversing.
7. Travel forward to the truck while raising the boom to clear truck sideboards. Dump load.
8. Reverse direction and lower bucket to several inches above ground level.



T7511CN -UN-27JUN91

02T,35,J8 -19-25JUN91-1/1

Transporting

TRANSPORTING PRECAUTIONS

If machine is transported, check route for road width and overhead clearance. Check any bridges for weight limits. (See Specifications chapter.)

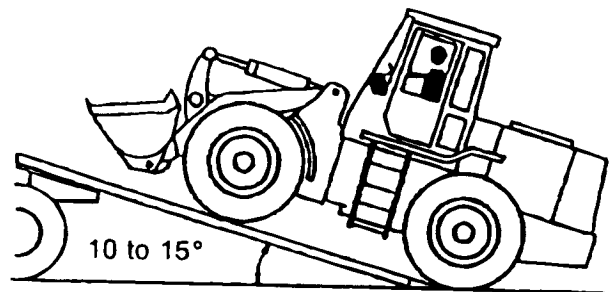
TX,40,FF3416 -19-27MAY93-1/1

LOADING MACHINE ON A TRAILER

1. Keep the trailer bed clean. Put chock blocks against trailer wheels.
2. Use a ramp or loading dock. Ramps must be strong enough, have a low angle, and correct height.
3. Fasten seat belt before starting engine.

CAUTION: Position the machine so that its centerline is over the centerline of the truck bed. **NEVER** steer the machine while on the ramp. If changing direction is required on the ramp, unload the machine from the ramp, reposition the machine on the ground, then try loading again.

4. Drive the machine onto the ramp slowly. The centerline of the machine should be over the centerline of the trailer.
5. Lower all equipment onto blocks or trailer bed.



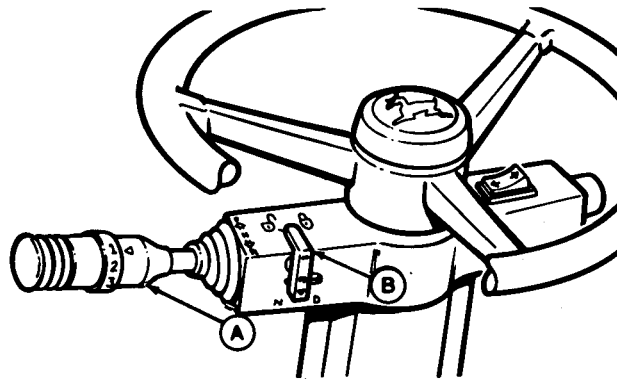
T8301AK -UN-17AUG94

TX,40,JC274 -19-29NOV94-1/2

6. Move transmission control lever (A) to neutral "N". Engage neutral lock (B).



CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.



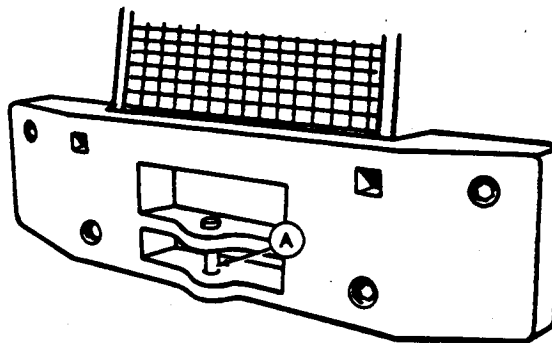
T7747BR -UN-19MAY92

7. Engage park brake.
8. Connect frame locking bar.
9. Turn key switch to STOP.
10. Turn battery disconnect switch OFF, if equipped.
11. Cover exhaust opening to prevent entry of debris and water.
12. Fasten each corner of the machine to the trailer with a chain or cable with appropriate load binder.
13. Place blocks in front of and behind tires.

TX,40,JC274 -19-29NOV94-2/2

TOWING PROCEDURE—ENGINE OPERATIONAL

CAUTION: Use flashing warning lights and turn signals when towing this equipment on public roads unless prohibited by state or local regulations. An implement safety lighting kit is available from your John Deere dealer. Keep safety items in good condition. Replace missing or damaged items.



T6629AM -JUN-20OCT88

IMPORTANT: Engine cannot be started by towing because machine is equipped with a torque converter.

For towing distances longer than 460 m (500 yd), drive shafts must be disconnected or transmission will be damaged due to a lack of lubrication. For towing short distances at slow speed, park brake is manually released.

A rigid tow bar must be used so towing machine can stop machine being towed. Towing machine must be of sufficient size to adequately handle or stop load being towed.

Never tow machine faster than 10 km/h (6.2 mph).

NOTE: For towing distances longer than 460 m (500 yd), use Steps 1—9. For towing short distances at slow speed, use Steps 10—19.

Steps for towing machine more than 460 m (500 yd):

1. Connect a rigid tow bar to drawbar pin (A) of machine being towed.
2. Start engine.
3. Install frame locking bar.

NOTE: Frame locking bar is installed to prevent weaving as machine is towed.

4. Move transmission control lever to neutral. Engage neutral lock.
5. Raise boom, and support so bucket is off ground.
6. Stop engine.

TX,40,DH2288 -19-12MAY93-2/2

TOWING PROCEDURE—ENGINE NON-OPERATIONAL



CAUTION: Prevent possible injury from unexpected machine movement. Always install frame locking bar, and block wheels to hold machine when working on park brake.

1. Install frame locking bar. Put blocks at front and rear of tires.

TX,40,JC1101 -19-18MAR96-1/4

2. Manually release park brake: Remove (3) screws and remove sheet metal cover from brake. Loosen lock nut (A).

3. Back out adjustment screw (B) to release park brake.

4. Remove blocks. Slowly tow machine.

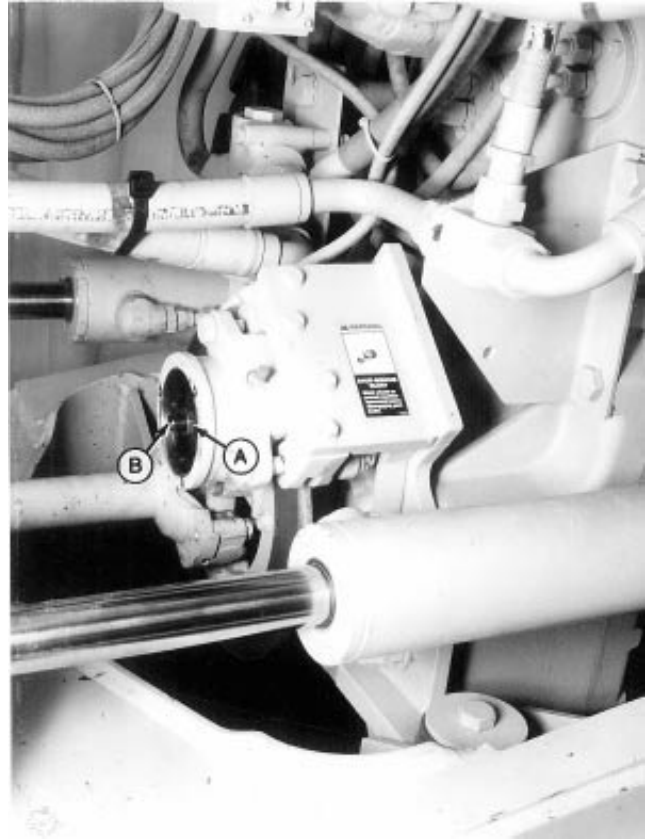
CAUTION: Prevent possible injury from unexpected machine movement. Always apply park brake to hold machine if drive shafts are connected.

5. When towing is completed, adjust park brake to hold machine. (See Adjust Park Brake in Maintenance—Every 1000 Hours chapter.)

6. Install sheet metal cover. Tighten cover screws.

CAUTION: Machine may roll when drive shafts are disconnected. Use blocks at front and rear of tires to prevent machine from rolling.

7. Put blocks at front and rear of tires.



644G Show

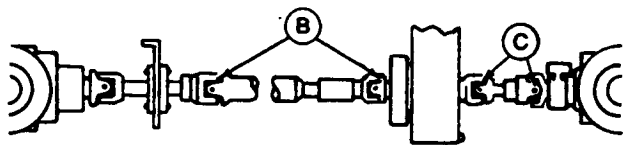
T100701 -UN-22MAR96

TX,40,JC1101 -19-18MAR96-2/4

8. Remove front (B) and rear (C) drive shafts so transmission output shaft does not turn.

9. Remove blocks. Slowly tow machine.

Steps for towing machine less than 460 m (500 yd):



T8518BM6 -UN-20OCT88

TX,40,JC1101 -19-18MAR96-3/4

10. Connect a rigid tow bar to drawbar pin (A) of machine being towed.

11. Start engine.

12. Install frame locking bar.

NOTE: Frame locking bar is installed to prevent weaving as machine is towed.

13. Move transmission control lever to neutral. Engage neutral lock.

14. Raise boom, and support so bucket is off ground.

15. Stop engine.

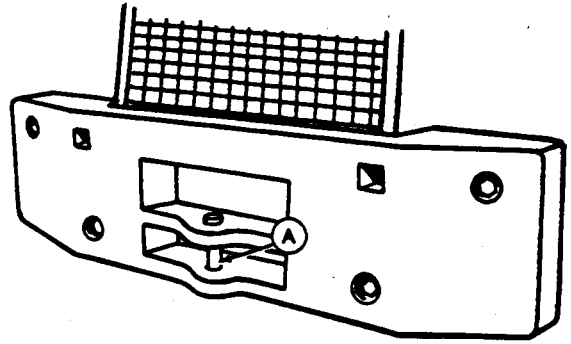
16. Put blocks at front and rear of tires.

CAUTION: Machine may roll when park brake is released. Use blocks at front and rear of tires to prevent machine from rolling.

17. Release park brake.

18. Remove blocks. Slowly tow machine.

19. Engage park brake when towing is completed.



T6629AM -UN-20OCT88

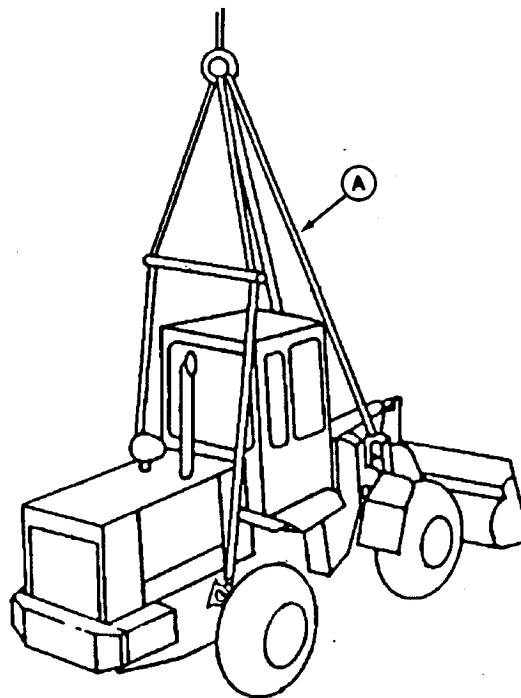
TX,40,JC1101 -19-18MAR96-4/4

LIFTING THE MACHINE



CAUTION: Prevent possible injury from unexpected machine movement. Clear all bystanders from lifting area. Select correct lifting cable strength for weight of machine. Test lift by raising machine 0.3 m (1 ft) off the ground.

SPECIFICATIONS	
Approximate machine weight (544G)	10 262 kg (22,624 lb)
Approximate machine weight (LL)	10 377 kg (22,881 lb)
Approximate machine weight (TC)	10 466 kg (23,078 lb)
Approximate machine weight (624G)	12 398 kg (27,338 lb)
Approximate machine weight (644G)	15 666 kg (34,538 lb)



1. Attach cables (A) to machine so cables do not rub machine.
2. Attach a tether cable to machine to control machine as it is lifted.
3. Test lift by raising machine 0.3 m (1 ft) off the ground.
4. Lift machine and swing to unloading area.

T7477AV -UN-19MAR91

TX,40,DH2187 -19-12SEP92-1/1

Fuels and Lubricants

DIESEL FUEL

Consult your local fuel distributor for properties of the diesel fuel available in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended.

In all cases, the fuel shall meet the following properties:

- **Cetane Number 40** minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20°C (-4°F) or elevations above 1500 m (5000 ft).
- **Cold Filter Plugging Point** (CFPP) below the expected low temperature OR **Cloud Point** at least 5°C (9°F) below the expected low temperature
- **Fuel Lubricity** should pass a minimum of 3100

gram load level as measured by the BOCLE scuffing test.

- **Sulfur content:**

1. Sulfur content should not exceed 0.5% Sulfur content less than 0.05% is preferred.
2. If diesel fuel with sulfur content greater than 0.5% sulfur content is used, reduce the service interval for engine oil and filter by 50%
3. DO NOT use diesel fuel with sulfur content greater than 1.0%

Bio-diesel fuels with properties and meeting DIN 51606 or equivalent specifications may be used.

DO NOT mix used engine oil or any other type of lubricant with diesel fuel.

TX,45,JC1132 -19-22MAY96-1/1

LOW SULFUR DIESEL FUEL CONDITIONER

When possible, use existing fuel formulations for engines used off-highway. This fuel will not require any additives to provide good performance and engine reliability. However, many local fuel distributors will not carry both low and regular sulfur diesel fuels.

If the local fuel distributor will supply only low sulfur fuel, order and use John Deere TY22030 Diesel Fuel Conditioner. It provides lubricating properties along with other useful benefits, such as cetane improver, anti-oxidant, fuel stabilizer, corrosion inhibitor and others. TY22030 is specifically for use with low sulfur fuels. Nearly all other diesel fuel conditioners only improve cold weather flow and stabilize long-term fuel storage. They do not contain the lubrication additives needed by rotary fuel injection pumps.

TX,45,DH3124 -19-20OCT93-1/1

HANDLING AND STORING DIESEL FUEL



CAUTION: Handle fuel carefully. Do not fill the fuel tank when engine is running.

DO NOT smoke while you fill the fuel tank or service the fuel system.

Fill the fuel tank at the end of each day's operation to prevent condensation and freezing during cold weather.



CAUTION: The fuel tank is vented through the filler cap. If a new filler cap is required, always replace it with an original vented cap.

When fuel is stored for an extended period of time or if there is a slow turnover of fuel, add a fuel conditioner to stabilize the fuel and prevent water condensation. Contact your fuel supplier for recommendations.

TX,45,JC1156 -19-03JUN96-1/1

DO NOT USE GALVANIZED CONTAINERS

IMPORTANT: Diesel fuel stored in galvanized containers reacts with zinc coating on the container to form zinc flakes. If fuel contains water, a zinc gel will also form. The gel and flakes will quickly plug fuel filters and damage fuel injectors and fuel pumps.

DO NOT USE a galvanized container to store diesel fuel.

Store fuel in:

- plastic containers.
- aluminum containers.
- specially coated steel containers made for diesel fuel.

DO NOT USE brass-coated containers: brass is an alloy of copper and zinc.

MX,FLBT,C -19-04JUN90-1/1

FUEL TANK



CAUTION: Handle fuel carefully. If the engine is hot or running, **DO NOT** fill the fuel tank. **DO NOT** smoke while you fill fuel tank or work on fuel system.

FUEL TANK CAPACITY	
544G, LL, TC,	218 L (58 gal)
624G	249 L (66 gal)
644G	284 L (75 gal)

To avoid condensation, fill the fuel tank at the end of each day's operation. Shut off engine before filling.

TX,45,DH2188 -19-17AUG92-1/1

DIESEL ENGINE OIL

AIR TEMPERATURE RANGE											
Fahrenheit (F)	-67	-40	-22	-4	14	32	50	68	86	104	122
Celsius (C)	-55	-40	-30	-20	-10	0	10	20	30	40	50
								SAE 40			
							SAE 30				
						SAE 15W-40					
					SAE 10W-40						
			SAE 5W-30								
	SAE 0W-30 (ARTIC OIL)										

Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oil is preferred:

- **John Deere PLUS-50®**

If John Deere PLUS-50 engine oil and a John Deere oil filter are used, the service interval for oil and filter changes may be extended by 50 hours.

The following oil is also recommended:

- John Deere TORQ-GARD SUPREME®

Other oils may be used if they meet one or more of the following:

- John Deere UNI-GARD™
- API Service Classification CG-4
- API Service Classification CF-4
- ACEA Specification E3
- ACEA specification E2
- CCMC Specification D5
- CCMC Specification D4

Multi-viscosity diesel engine oils are preferred.

If diesel fuel with sulfur content greater than 0.5% is used, reduce the service interval by 50%.

TRANSMISSION OIL, HYDRAULIC SYSTEM OIL AND DIFFERENTIAL OIL

AIR TEMPERATURE RANGE											
Fahrenheit (F)	-67	-40	-22	-4	14	32	50	68	86	104	122
Celsius (C)	-55	-40	-30	-20	-10	0	10	20	30	40	50

Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oils are preferred:

- JOHN DEERE HY-GARD[®]
- John Deere Low Viscosity HY-GARD[®]

The following oil is also recommended:

- John Deere UNI-GARD[™]

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C

- John Deere Standard JDM J20D
- John Deere Standard JDM J27A

Use the following oil when a biodegradable fluid is required:

- John Deere BIO-HY-GARD^{™1}

¹BIO-HY-GARD meets or exceeds the minimum biodegradability of 80% within 21 days according to CEC-L-33-T-82 test method. BIO-HY-GARD should not be mixed with mineral oils because this reduces the biodegradability and makes proper oil recycling impossible.

GREASE

[illegible]

T8358A1 ©

Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

- John Deere HIGH TEMPERATURE EP GREASE
- John Deere GREASE-GARD

The following greases are preferred:	Other greases may be used if they meet one of the
--------------------------------------	---

- | | |
|--|---|
| <ul style="list-style-type: none"> John Deere MOLY HIGH TEMPERATURE EP GREASE | <p>following:</p> <ul style="list-style-type: none"> NLGI Performance Classification GC-LB |
|--|---|

- Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.
- John Deere HIGH TEMPERATURE EP GREASE
 - John Deere GREASE-GARD

<p>The following greases are preferred:</p>	<p>Other greases may be used if they meet one of the following:</p>
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- | | |
|--|---|
| <ul style="list-style-type: none"> John Deere MOLY HIGH TEMPERATURE EP GREASE | <p>following:</p> <ul style="list-style-type: none"> NLGI Performance Classification GC-LB |
|--|---|

TX,45,JC1134 -19-22MAY96-1/1

ALTERNATIVE AND SYNTHETIC LUBRICANTS

<p>Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual. Some John Deere lubricants may not be available in your location. Consult your John Deere dealer to obtain information and recommendations.</p>	<p>The temperature limits and service intervals shown in this manual apply to both conventional and synthetic oils.</p> <p>Re-refined base stock products may be used if the finished lubricant meets the performance</p>
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Synthetic lubricants may be used if they meet the performance requirements listed in this manual.

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual. Some John Deere lubricants	The temperature limits and service intervals shown in this manual apply to both conventional and synthetic oils.
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may not be available in your location. Consult your John Deere dealer to obtain information and recommendations.	Re-refined base stock products may be used if the finished lubricant meets the performance requirements.
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DX,ALTER -19-01FEB94-1/1

LUBRICANT STORAGE

Your equipment can operate at top efficiency only if clean lubricants are used.

Use clean containers to handle all lubricants.

Store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

TX,45,JC1135 -19-22MAY96-1/1

MIXING OF LUBRICANTS

In general, avoid mixing different brands or types of oil. Oil manufacturers blend additives in their oils to meet certain specifications and performance requirements.

Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

Consult your John Deere dealer to obtain specific information and recommendations.

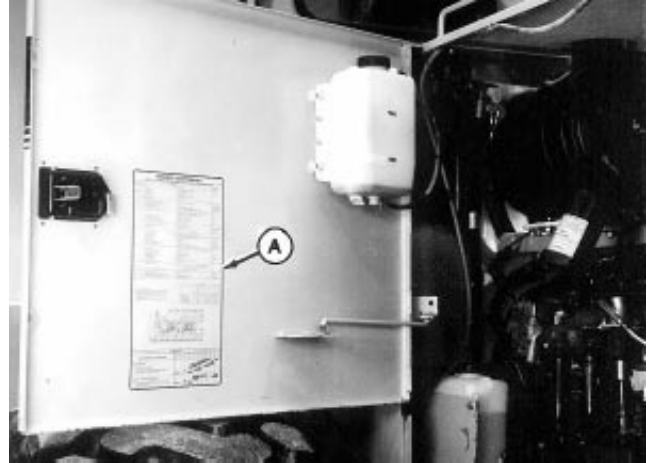
TX,45,JC1136 -19-22MAY96-1/1

Periodic Maintenance

SERVICE YOUR MACHINE AT SPECIFIED INTERVALS

Lubricate, make service checks and adjustments at intervals shown on the periodic maintenance chart (A) and on the following pages.

Service items at multiples of the original requirement. For example, at 500 hours also service those items (if applicable) listed under 250 hours, 100 hours, 50 hours and 10 hours or daily.



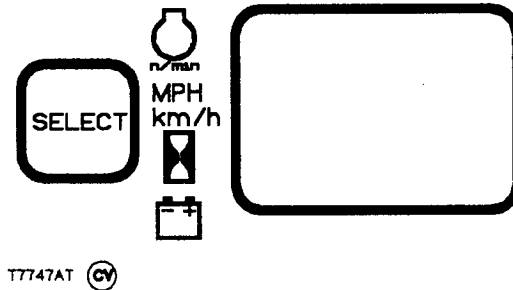
T100700 -UN-22MAR96


TX,50,JC1104 -19-18MAR96-1/1

CHECK THE HOUR METER REGULARLY

Press the SELECT switch to display the hour meter on the digital display, to determine when your machine needs periodic maintenance.

Intervals on the periodic maintenance chart are for operating in normal conditions. If you operate your machine in severe conditions, you should service it at SHORTER INTERVALS.



T7747AT 

T7747AT -UN-19MAY92

TX,50,DH2193 -19-02OCT92-1/1

USE CORRECT FUELS AND LUBRICANTS

IMPORTANT: To prevent machine damage when servicing your machine, use only recommended fuels and lubricants. (See Fuels and Lubricants chapter.)

TX,50,DH1964 -19-03JAN92-1/1

PREPARE MACHINE FOR MAINTENANCE

Before performing maintenance procedures given in the following chapters, and before leaving the operator's seat, park the machine as described below unless another position is specified in the procedure.

1. Park machine on a level surface.
2. Lower bucket to ground.

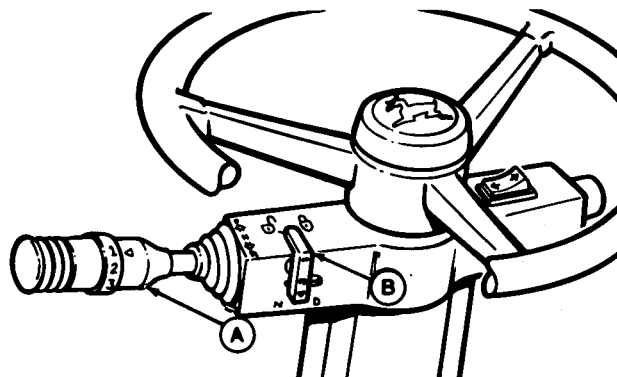
TX,50,DH2194 -19-29NOV94-1/2

NOTE: Boom down switch (C) must be pushed while moving control lever forward to lower boom with engine stopped.

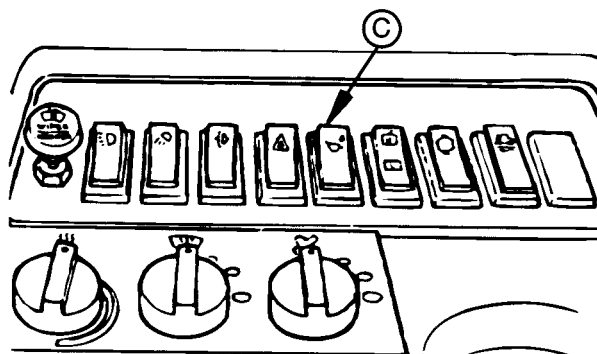
3. Move transmission control lever (A) to neutral "N". Engage neutral lock (B).

CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.

4. Engage park brake.
5. Turn key switch to STOP. If maintenance must be performed with engine running, do not leave machine unattended.
6. Turn battery disconnect switch OFF, if equipped.



T7747BR -UN-19MAY92



T8375AM -UN-02DEC94

TX,50,DH2194 -19-29NOV94-2/2

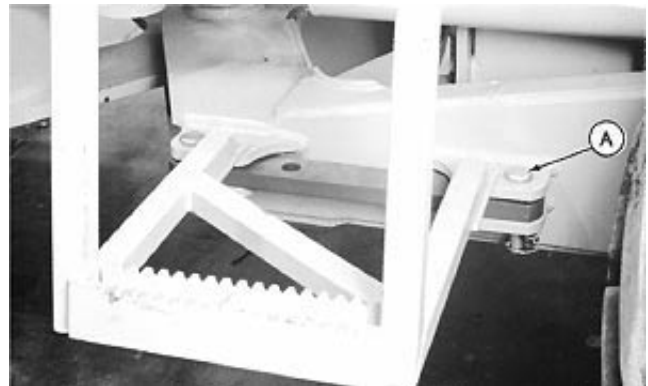
LOCKING MACHINE FRAME

⚠ CAUTION: Prevent possible injury from unexpected machine movement. Connect frame locking bar to both frames before you work in frame pivot area.

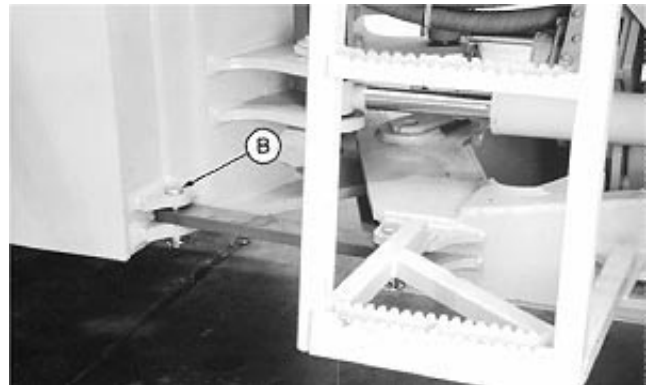
1. Align machine frames.

TX,50,DH2199 -19-17AUG92-1/2

2. Remove pin (A), and move locking bar forward.
3. Install pin through holes in machine frame (B) and end of locking bar.



624G Shown



TX,50,DH2199 -19-17AUG92-2/2

BOOM LOCK



CAUTION: Always install boom lock before working on or around this machine with the boom raised.

Empty bucket and place in dump position before installing boom lock.

1. Raise boom. Empty bucket and place in dump position before installing boom lock.
2. Remove boom lock from side of machine by turning lock lever counterclockwise.
3. Install boom lock on boom cylinder with lock lever facing to the outside of machine. Lower boom onto boom lock.
4. Tighten boom lock lever.
5. Store boom lock on side of machine when not in use.



T7839BB -UN-17SEP92



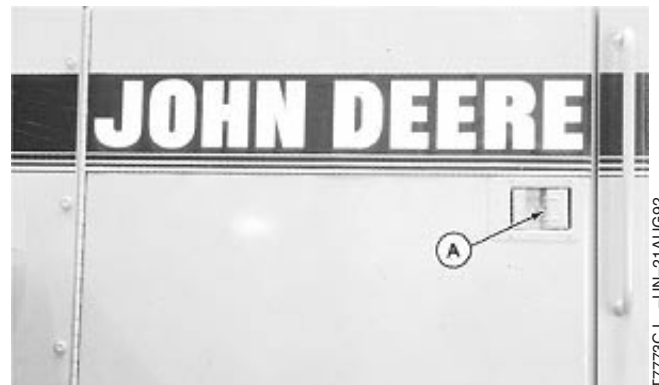
T100699 -UN-22MAR96

644G Shown

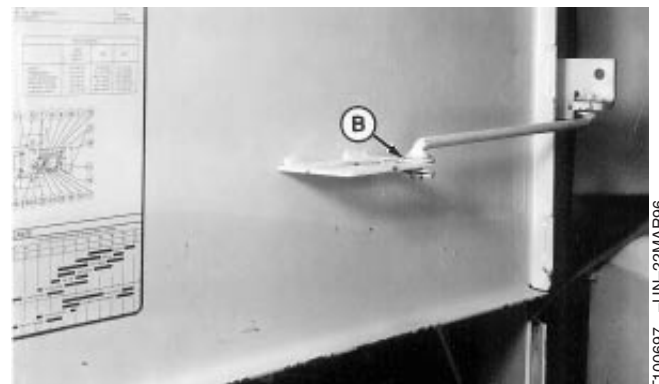
TX,50,JC255 -19-29NOV94-1/1

OPENING ENGINE SIDE SHIELDS AND SERVICE DOORS

1. Pull out on latch (A) to open engine service door.
2. Position rod in notch (B) to hold door open.
3. To open lower side shield, remove cotter pin and washers from engine service door. Open door to its full extent. Pull lower side shield outward.



T7773CJ -UN-21AUG92



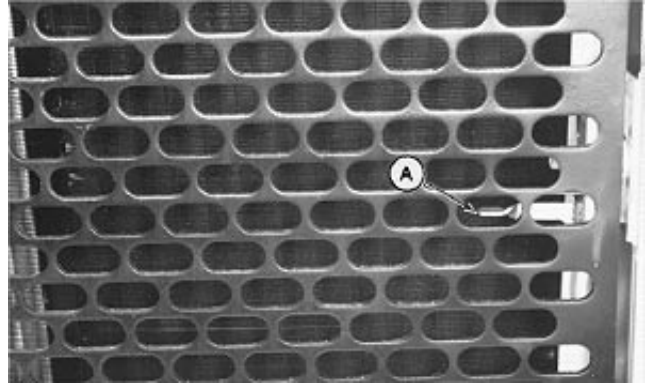
T100697 -UN-22MAR96

TX,50,JC269 -19-29NOV94-1/1

OPENING GRILLE DOOR

Push down on latch (A) to open grille door.

Rotate stop (B) 180° to hold door open.



T6785CD -UN-19OCT88



T7773CD -UN-10AUG92

TX,50,DH2198 -19-31JUL92-1/1

CHECK WINDSHIELD WASHER FLUID LEVEL

Check fluid in windshield washer bottle (A).

During winter season, use all season windshield washer fluid which will not freeze.



T7829AD -UN-31AUG92

544G Shown

TX,50,DH2200 -19-26AUG92-1/1

MAINTENANCE AND REPAIR RECORD KEEPING SYSTEM

The checklist on the following page summarizes scheduled maintenance, and parts and oil required at each maintenance interval.

Use the checklist to:

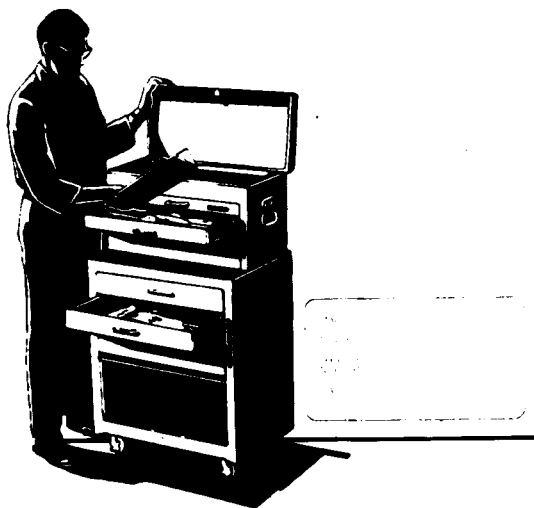
- Remind you to perform machine maintenance at specified intervals to minimize downtime.
- Calculate cost of machine operation and ownership allowing you to make better job estimates.
- Place yourself in a stronger position at trade-in time.
- Satisfy your SECURE contract requirements.

As maintenance is performed, check off each item on the list and record date and hour meter reading. Use the second (perforated) copy of this form (immediately preceding the Service Literature order form inside the back cover).

Do not tear out or mark on Checklist in the Periodic Maintenance chapter; keep it to make extra copies.

MARKS

MAINTENANCE AND REPAIR RECORD KEEPING
SYSTEM FOR JOHN DEERE MACHINE OWNERS



T7511CO -UN-27JUN91

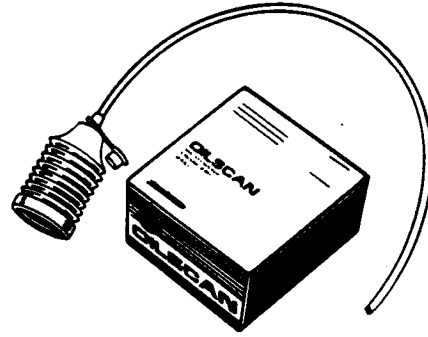
TX,50,FF2898 -19-09JUL93-1/1

OILSCAN™

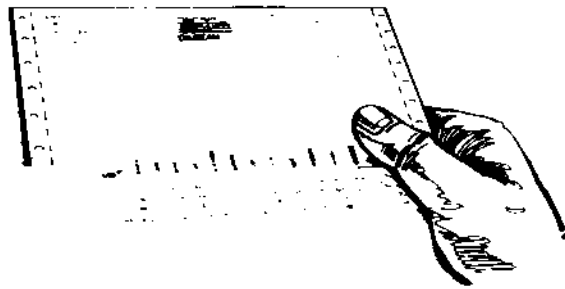
OILSCAN is a John Deere oil sampling program to help you monitor machine performance and identify potential problems before they cause serious damage.

Oil samples should be taken from each system prior to its recommended oil change interval.

OILSCAN kits are available from your dealer.



T6828AB -UN-15JUN89



T6829AB -UN-18OCT88

TX,50,JC1061 -19-12FEB96-1/1

MAINTENANCE AND REPAIR RECORD KEEPING SYSTEM

SERVICE INTERVALS

Service your machine at intervals shown on this chart. Also, perform service on items at multiples of the original requirement. For example, at 500 hours also service those items (if applicable) listed under 250 hours, 100 hours, 50 hours and 10 hours or daily.

As Required

• Inspect tires and check pressure	• Inspect belts and check tension
• Check wheel retainer cap screws	• Drain water and clean fuel tank strainer
• Clean or replace air cleaner elements	• Drain and clean primary fuel filter
• Check and clean air inlet cover	• Check and clean cab recirculating air filter

Every 10 Hours or Daily

• Lubricate pivots	• Check recovery tank coolant level
• Clean air cleaner dust unloader valve	• Check hydraulic system oil level
• Check engine oil level	• Check transmission oil level

Every 100 Hours

• Lubricate loader boom and cylinder pivots	• Check cab recirculating air filter
• Lubricate front steering cylinder pivots	• Lubricate oscillating rear axle
• Check cab fresh air filter	• Lubricate rear steering cylinder pivots

REQUIRED PARTS

Insure machine performance and availability; use only genuine John Deere parts. Verify part numbers are current and that any associated parts are also on hand i.e. filters, O-rings.

		Part Number	250 HOURS	500 HOURS	1000 HOURS	3000 HOURS
Engine Oil Filter	*544G, 624G	T19044	1	1	1	1
	644G	RE57394	1	1	1	1
Primary Fuel Filter	All	RE63136		1	1	1
Final Fuel Filter	*544G, 624G	RE62419		1	1	1
	644G	RE62419		1	1	1
Hydraulic System Return Filter	*544G	AT144879		1	1	1
	624G, 644G	AT140315		1	1	1
Hydraulic Reservoir Breather Filter	All	AM39653		1	1	1
Transmission Filter	All	AT168989			1	1
Air Filter Primary	*544G, 624G	AR79679			1	1
	644G	AR80652			1	1
Air Filter Secondary	*544G, 624G	AR79680			1	1
	644G	AR80653			1	1
Differential Lock Return Filter(s)	All	T19044				1 or 2
TORQ-GARD SUPREME PLUS 50® Oil	*544G, 624G		19 L (20 qt)	19 L (20 qt)	19 L (20 qt)	19 L 20 qt)
	644G		24 L (25 qt)	24 L (25 qt)	24 L (25 qt)	24 L 25 qt)
HY-GARD® Transmission and Hydraulic Oil	*544G				9.5 L (10 qt)	117 L (31 gal)
	624G				11 L (12 qt)	151 L (40 gal)
	644G				14 L (15 qt)	174 L (46 gal)
Coolant Conditioner		TY16004		1	1	1
OILSCAN Kit		IPSKIT1	1	1	2	5
COOLSCAN Kit		DSO251				

*includes 544G LL and 544G TC

TX,50,JC1137 -19-22MAY96-1/1

Periodic Maintenance

MAINTENANCE AND REPAIR RECORD KEEPING SYSTEM

Model: ☐ 544G ☐ 544G LL ☐ 544G TC ☐ 624G ☐ 644G Customer: _____

PIN/Serial Number: _____ Delivery Date: _____ Hour Meter Reading: _____

Oil Sampling

Oil samples should be taken from each system prior to its recommended drain/change interval indicated on this form. Maintenance recommendations supplied by OILSCAN will be provided based upon the oil analysis and operating information you supply. Regular oil sampling will extend the operational life of your machine's systems.

Every 250 Hours

☐ Check receiver dryer moisture indicator ☐ Replace engine oil filter
☐ Drain and refill engine oil ☐ Check radiator coolant level

Comments: _____

Date: _____ Hour Meter Reading: _____ Maintenance Performed By: _____

Every 500 Hours

☐ Lubricate front drive line ☐ Replace final fuel filter
☐ Check air intake hoses ☐ Replace hydraulic system return filter
☐ Check battery water level ☐ Replace hydraulic reservoir breather filter
☐ Add rust inhibitor to radiator ☐ Check front and rear differential oil level
☐ Replace primary fuel filter

Comments: _____

Date: _____ Hour Meter Reading: _____ Maintenance Performed By: _____

Every 1000 Hours

☐ Lubricate rear drive line ☐ Change transmission oil
☐ Check and adjust engine speed linkage ☐ Replace transmission filter
☐ Replace air cleaner dust unloader valve ☐ Inspect and adjust park brake
☐ Replace air cleaner elements ☐ Lubricate frame hinge pivots
☐ Remove and clean engine crankcase vent tube

Comments: _____

Date: _____ Hour Meter Reading: _____ Maintenance Performed By: _____

Every 2000 Hours

☐ Adjust engine valve lash ☐ Lubricate front driveline support bearing

Comments: _____

Date: _____ Hour Meter Reading: _____ Maintenance Performed By: _____

Every 3000 Hours

☐ Change hydraulic system oil ☐ Replace differential lock return filters
☐ Clean hydraulic system suction strainer ☐ Change front and rear differential oil

Comments: _____

Date: _____ Hour Meter Reading: _____ Maintenance Performed By: _____

Maintenance—As Required

CHECK TIRE PRESSURE



CAUTION: Explosive separation of a tire and rim parts can cause serious injury or death.

Always maintain the correct tire pressure. DO NOT inflate tires above the recommended pressure.

Inspect tires and wheels daily. DO NOT operate with low pressure, cuts, bubbles, damaged rims, or missing lug bolts.

Carefully inspect any tire and rim assembly that has been run flat or severely underinflated before reinflating the tire. Damage to the rim and tire may have developed. Call your authorized dealer or a qualified repair service to inspect the rim and tire assembly and make necessary repairs.

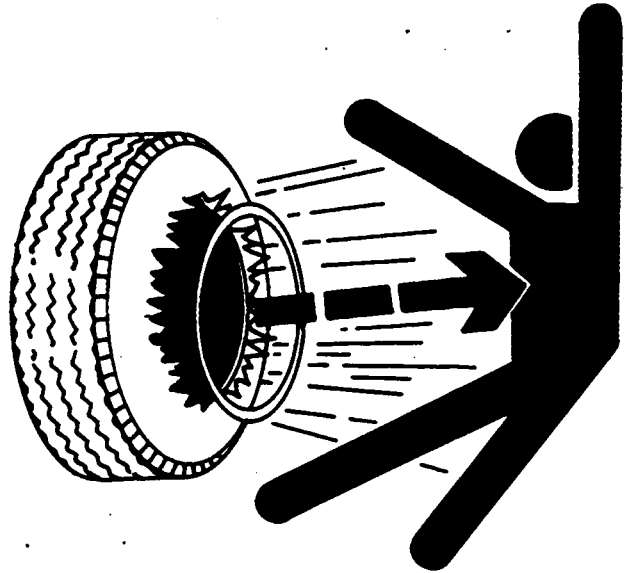
When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

NEVER cut or weld on an inflated tire or rim assembly. Heat from welding could cause an increase in pressure and may result in tire explosion.

Do not attempt to mount a tire if you do not have the proper equipment and experience to perform the job. Have it done by your authorized dealer or a qualified repair service.

Check tire pressure with an accurate gauge having 7.0 kPa (0.07 bar) (1 psi) graduations.

1. Shut off air supply to hose.
2. Move gauge hand to correct pressure.
3. Lock air chuck on tire valve.



TS211 -UN-23AUG88



T87502 -UN-21OCT88

4. Turn on air supply. Stand to front or rear of tire when you add air to tire.
5. After tire is at correct pressure, shut off air supply. Release chuck. (See following Tire Pressure chart.)
6. Inspect tire for damage.

TX,55,FF2820 -19-25OCT94-2/2

TIRE PRESSURES

544G, 544G TC					
Tire Size	Type	Ply Rating	Operating Pressure*		
			kPa	bar	psi
14 x 24	G2	10	300	3.8	55
15.5 x 25	L2	12	380	3.8	55
15.5R x 25	L2 or L3 Equiv	(1) Star	**Front 415	4.1	60
			**Rear 205	2.0	30
			Rear, alternate 310	3.1	45
17.5 x 25	L2	12	345	3.4	50
17.5 x 25	L3	12	345	3.4	50
17.5R x 25	L2 or L3 Equiv	(1) Star	**Front 345	3.4	50
			**Rear 170	1.7	25
			Rear, alternate 275	2.8	40
20.5 x 25	L2	12	275	2.8	40
20.5 x 25	L3	12	275	2.8	40
20.5 x 25	L3	16	345	3.4	50
20.5R x 25	L2 or L3 Equiv	(1) Star	**Front 205	2.0	30
			**Rear 170	1.7	25
			Rear, alternate 205	2.0	30
23.1 x 26	LS-2	10	140	1.4	20
28L x 26	LS-2	14	170	1.7	25

*Shipping pressure may vary from operating pressure.

**These radial tire pressures are recommended for optimum traction and tire wear under typical conditions. If a higher rear tire pressure is used, it should not exceed the alternator pressure listed.

TX,55,JC248 -19-29NOV94-1/1

544G LL					
Tire Size	Type	Ply Rating	Operating Pressure*		
			kPa	bar	psi
17.5 x 25	L2	12	345	3.4	50
17.5 x 25	L3	12	345	3.4	50
17.5R x 25	L2 or L3 Equiv	(1) Star	**Front 345	3.4	50
			**Rear 170	1.7	25
			Rear, alternate 275	2.8	40
20.5 x 25	L2	12	275	2.8	40
20.5 x 25	L3	12	275	2.8	40
20.5 x 25	L3	16	345	3.4	50
23.1 x 26	LS-2	10	140	1.4	20
28L x 26	LS-2	14	170	1.7	25

*Shipping pressure may vary from operating pressure.

**These radial tire pressures are recommended for optimum traction and tire wear under typical conditions. If a higher rear tire pressure is used, it should not exceed the alternator pressure listed.

624G					
Tire Size	Type	Ply	Operating Pressure*		
		Rating	kPa	bar	psi
14 x 24	G2	10	380	3.8	55
17.5 x 25	L3	12	345	3.4	50
17.5 x 25	L2	12	345	3.4	50
17.5 R25	L2 or L3 Equiv	(1) Star	**Front 450	4.5	65
			**Rear 205	2.0	30
			Rear, alternate 310	3.1	45
20.5 x 25	L3	12	275	2.8	40
20.5 x 25	L3	16	345	3.4	50
20.5 x 25	L2	12	275	2.8	40
20.5R x 25	L2 or L3 Equiv	(1) Star	**Front 310	3.1	45
			**Rear 170	1.7	25
			Rear, alternate 275	2.8	40
23.1 x 26	LS-2	10	140	1.4	20
28L x 26	LS-2	14	170	1.7	25

*Shipping pressure may vary from operating pressure.

**These radial tire pressures are recommended for optimum traction and tire wear under typical conditions. If a higher rear tire pressure is used, it should not exceed the alternator pressure listed.

644G					
Tire Size	Type	Ply	Operating Pressure*		
		Rating	kPa	bar	psi
16.0 X 24	G2	12	380	3.8	55
20.5 X 25	L2	12	275	2.8	40
20.5 x 25	L2	16	345	3.4	50
20.5 x 25	L3	16	345	3.4	50
20.5R x 25	L2 or L3 Equiv	(I) Star	**Front 415	4.1	60
			**Rear 205	2.0	30
			Rear, alternate 310	3.1	45
23.5 x 25	L2	12	240	2.4	35
23.5 x 25	L3	16	310	3.1	45
23.5 x 25	L3	20	380	3.8	55
23.5R x 25	L2 or L3 Equiv	(1) Star	**Front 275	2.8	40
			**Rear 205	2.0	30
			Rear, alternate 240	2.4	35
28L x 26	LS-2	14	170	1.7	25

*Shipping pressure may vary from operating pressure.

**These radial tire pressures are recommended for optimum traction and tire wear under typical conditions. If a higher rear tire pressure is used, it should not exceed the alternator pressure listed.

TX,55,JC1159 -19-03JUN96-1/1

TIGHTEN WHEEL RETAINER CAP SCREWS

NOTE: Tighten cap screws after first 10 hours, then again after first 50 hours of loaded operation. After that, tighten as required.

Tighten wheel cap screws to 542 N•m (400 lb-ft).

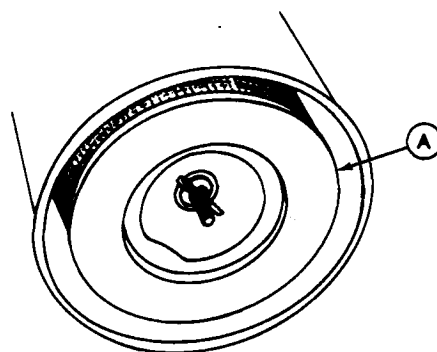
TX,55,DH2551 -19-16JUN93-1/1

CLEAN OR REPLACE AIR CLEANER ELEMENTS

1. Open left service door.
2. Loosen wing nut to remove cover.

TX,55,DH2226 –19–31JUL92–1/3

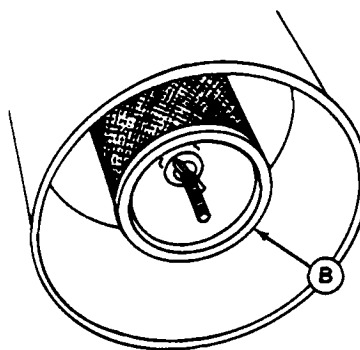
3. Remove wing nut and primary element (A).



T6119AF –UN–01NOV88

TX,55,DH2226 –19–31JUL92–2/3

4. Remove wing nut from 544G, LL, TC, and 644G, or hex nut from 624G, and remove secondary element (B).



T6119AG –UN–01NOV88

TX,55,DH2226 –19–31JUL92–3/3

CLEAN DUSTY PRIMARY ELEMENT

1. Tap element with the palm of your hand, NOT ON A HARD SURFACE.



CAUTION: Prevent possible injury from flying chips if compressed air is more than 210 kPa (2.1 bar) (30 psi). Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment including eye protection.

2. If this does not remove dust, use compressed air under 210 kPa (2.1 bar) (30 psi).
3. Direct air up and down the pleats from inside to outside. Be careful not to make a break in the element.



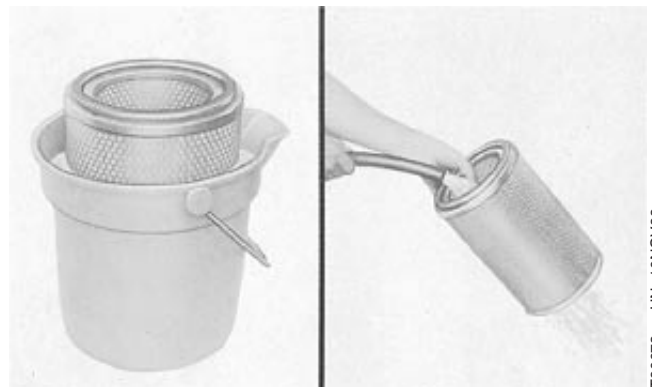
T47764 -UN-09NOV88

03T,55,MM11 -19-18NOV92-1/1

CLEAN OILY OR SOOTY PRIMARY ELEMENT

IMPORTANT: You can damage element. DO NOT wash element in fuel oil, oil, gasoline, or solvent. DO NOT use compressed air to remove water from an element.

1. Wash element in warm water and John Deere R36757 Filter Element Cleaner or equivalent non-sudsing detergent.
2. Flush with clean water. Use water pressure under 280 kPa (2.8 bar) (40 psi).
3. Shake the element to remove water. Do not install element unless it is dry.



T90673 -UN-10NOV88

03T,55,C19 -19-24JUL91-1/1

INSPECT ELEMENT

IMPORTANT: A damaged or dirty element may cause engine damage.

Install a new primary element:

- If the element shows damage.
- If element will not clean.
- After 1000 hours service or annually.

Install a new secondary element:

- If the primary element is damaged and needs to be replaced.
- If the element is visibly dirty.
- After 1000 hours service or annually.

DO NOT clean a secondary element.
Install a new element carefully centering it in the canister.



T90684 -UN-10NOV88

1. Inspect element and gasket for damage.
2. Air restriction indicator will not signal correctly if an element has a break or is not correctly sealed in air cleaner housing. Throw away element that has the slightest damage. If gasket is broken or missing, install a new element.

03T,55,C67 -19-24JUL91-1/1

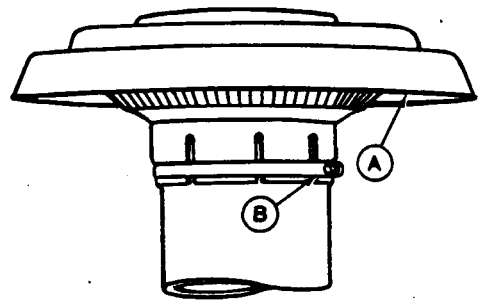
CHECK AIR INLET COVER

1. Loosen clamp and slide strap (B) down stack.
2. Remove air inlet cover (A).



CAUTION: Prevent possible injury from flying chips if compressed air is more than 210 kPa (2.1 bar) (30 psi). Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment including eye protection.

3. Clean cover with compressed air or soapy water. Dry cover.
4. Install cover on stack. Tighten clamp.



T6779BQ -UN-19OCT88

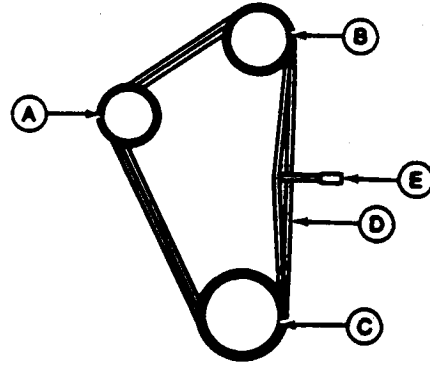
TX,55,DH2206 -19-31JUL92-1/1

CHECK AND ADJUST BELT TENSION—544G, 624G

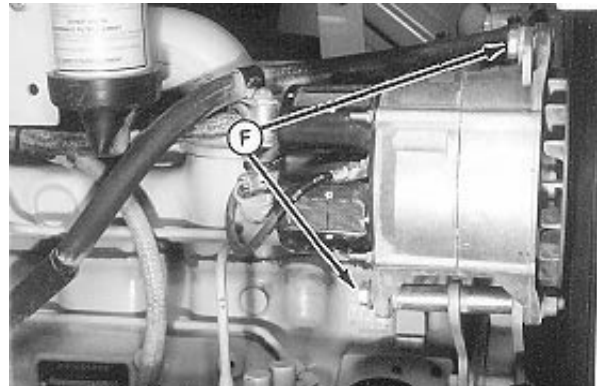
1. Check belt regularly for wear. Replace if necessary.
2. Check belt tension of belt closest to fan midway between pulleys. 544G, LL, TC, 624G: right side of engine. 644G: left side of engine.

SPECIFICATIONS	
544G, LL, TC, 624G:	
Force: 67 N (15 lb)	Deflection: 19 mm (0.75 in.)

3. If deflection is not within specifications, loosen alternator mounting cap screws.
4. Apply force to FRONT alternator housing only (near the belt) until tension is correct.
5. Tighten cap screws to 57 N•m (40 lb-ft).



544G, 624G Shown



544G Shown

- A—Alternator Pulley
- B—Fan Pulley
- C—Crankshaft Pulley
- D—Straight Edge
- E—Belt Deflection Gauge
- F—Cap Screws

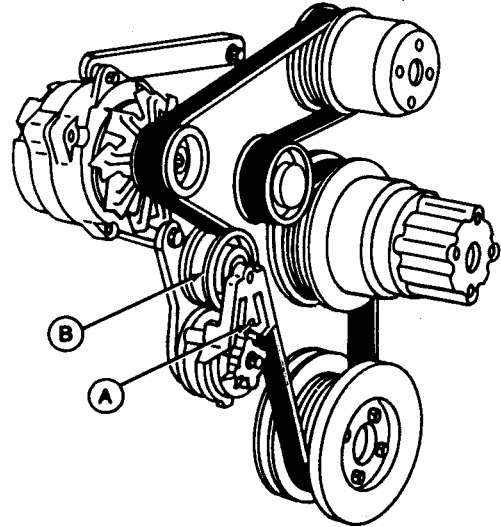
TX.55.JC1138 -19-22MAY96-1/1

T6603AK -UN-18OCT88

T8372BK -UN-30NOV94

INSPECT SERPENTINE BELT—644G

1. Check belt regularly for wear, especially for cracks at the bottom of grooves and for frayed edges.
2. If necessary, replace belt.
3. Place the drive of a 1/2 in. drive ratchet in square hole. Turn ratchet counterclockwise to pull tension adjuster assembly away from belt, releasing belt tension.
4. Hold tension adjuster assembly away from belt while removing old belt and installing new belt.
5. Slowly turn ratchet clockwise to place tension adjuster assembly against new belt. Tension is automatically adjusted.
6. Remove ratchet from assembly.



TX,55,JC1118 -19-20MAR96-1/1

T7405BG -UN-15NOV90

DRAIN FUEL TANK

1. Remove fuel tank filler cap.

TX,55,DH2491 -19-16MAY95-1/2

NOTE: *Petcock located at left front of machine frame bottom guard.*

2. Loosen petcock (A).
3. Drain water and sediment into a container.
4. Tighten petcock.
5. Install filler cap.



TX,55,DH2491 -19-16MAY95-2/2

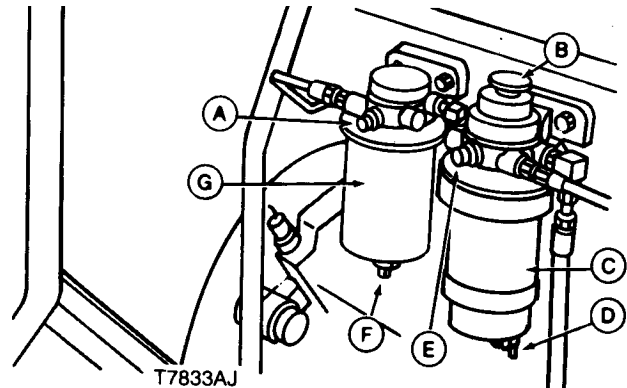
T7773CN -UN-21AUG92

DRAIN AND CLEAN PRIMARY FUEL FILTER (WATER SEPARATOR)—544G, 624G

1. Open left side shield to access primary fuel filter (water separator).

TX,55,JC283 -19-16MAY95-1/3

2. Put container under drain valves (D and F).
3. Rotate retaining ring around filter element counterclockwise 1/4 turn. Lifting ring as it is rotated helps get it past retaining detent. Ring should drop down and release filter from base.
4. Remove hand primer (B) from fuel filter base. Disassemble hand primer assembly and clean out any debris.



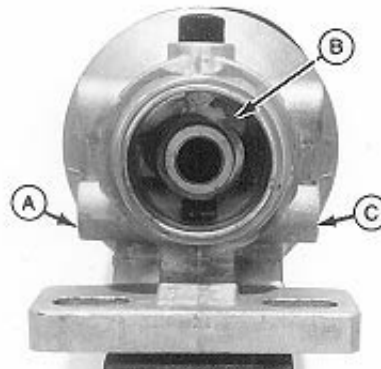
T7833AJ -UN-10SEP92



- A—Bleed Screw (Final Fuel Filter)
- B—Pump
- C—Primary Fuel Filter (Water Separator)
- D—Drain Valve (Primary Fuel Filter)
- E—Bleed Screw (Primary Fuel Filter)
- F—Drain Valve
- G—Final Fuel Filter

TX,55,JC283 -19-16MAY95-2/3

5. Remove fuel inlet line (A) and fuel drain plug (C).
6. Flush any debris from filter base (B).
7. Install fuel inlet drain plug and fuel inlet line.
8. Assemble primer assembly and install onto fuel filter base.
9. Install filter element to fuel filter base.
10. Close side shield.
11. Dispose of waste properly.

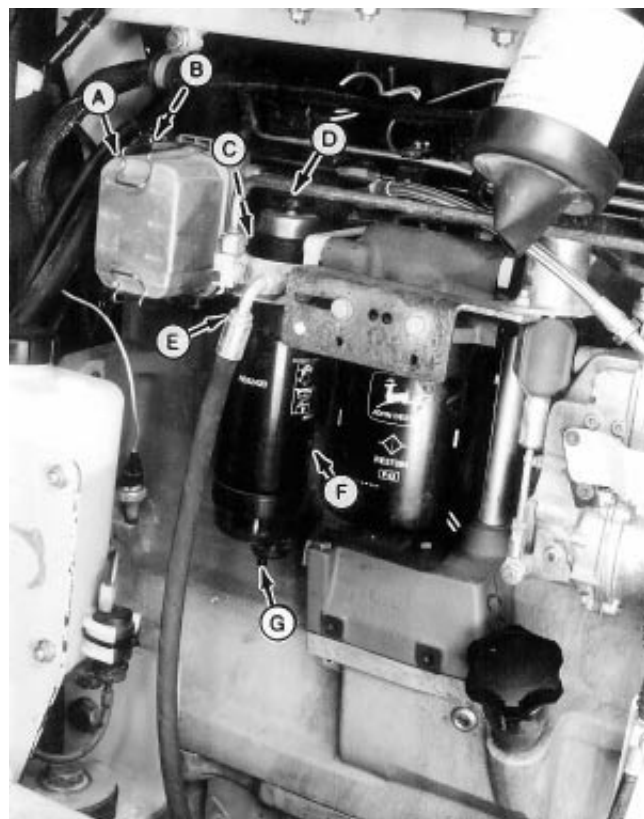


T8387AD -UN-17DEC94

TX,55,JC283 -19-16MAY95-3/3

DRAIN AND CLEAN PRIMARY FUEL FILTER (WATER SEPARATOR)—644G

1. Open left side shield to access primary fuel filter (F).
2. Place container under filter.
3. Open drain valve (G) and press pump (D) to extract water from fuel system.
4. Close drain valve.



T100696 -UN-22MAR96

- A—Final Fuel Filter
- B—Bleed Screw
- C—Bleed Screw
- D—Pump
- E—Fuel Supply Line
- F—Primary Fuel Filter
- G—Drain Valve

TX,55,JC1105 -19-18MAR96-1/1

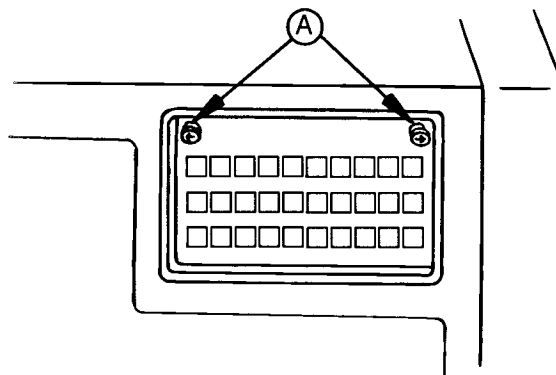
CHECK CAB RECIRCULATING AIR FILTER

NOTE: The cab recirculating air filter is located behind the seat.

1. Loosen two thumbscrews (A) holding grille. Remove grille.
2. Remove filter.

CAUTION: Reduce compressed air to less than 210 kPa (2 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment, including eye protection.

3. Clean filter in one of these ways:
 - Tap it on a flat surface with the dirty side down.
 - Use compressed air opposite to the normal air flow.
 - Wash the filter in warm, soapy water. Flush the filter and let it dry before using the air conditioner.
4. Replace filter and grille.
5. Tighten thumbscrews.



T8295AA -JUN-10AUG94

TX,55,JC1122 -19-16APR96-1/1

Maintenance—Every 10 Hours or Daily

LUBRICATE PIVOTS

Lubricate working tool pivots every 10 hours or daily when operating in deep mud, water, or snow.

TX,60,DH2560 -19-02OCT92-1/1

CLEAN AIR CLEANER DUST UNLOADER VALVE

IMPORTANT: A missing, damaged, or hardened dust unloader valve will make the dust cup precleaner ineffective, causing very short element life. Valve should suck closed above 1/3 engine speed.

Squeeze dust valve (A) to remove dust from the air cleaner.

If operating in high dust conditions, squeeze dust valve every couple of hours of operation to release dust.



T7773CQ -UN-21AUG92

TX,60,DH2210 -19-17AUG92-1/1

CHECK ENGINE OIL LEVEL

IMPORTANT: If oil level is low, the engine can be damaged. DO NOT operate the engine when oil level is below the ADD mark.

The most accurate oil level reading is obtained when the engine is cold, before starting the engine for the day's operation.

1. Park machine on a level surface.
2. Engage park brake.

TX,60,JC1106 -19-18MAR96-1/2

3. 544G, 624G: Make sure dipstick (A) is fully seated.

4. 544G, 624G: Remove dipstick to check oil level.

644G: Tighten filler cap (B) to fully seat. Remove filler cap to check oil level.

BEFORE THE ENGINE IS STARTED: The engine is full when oil level is in the cross hatched area. It is acceptable to run the engine when the oil level is above the ADD mark.

AFTER THE ENGINE HAS BEEN RUN: Allow the oil to drain into the oil pan for 10 minutes before checking the oil level. Ten minutes after shutdown the engine oil level must be above the ADD mark.

5. If necessary, remove filler cap (B) to add oil. (See Fuels and Lubricants chapter.)



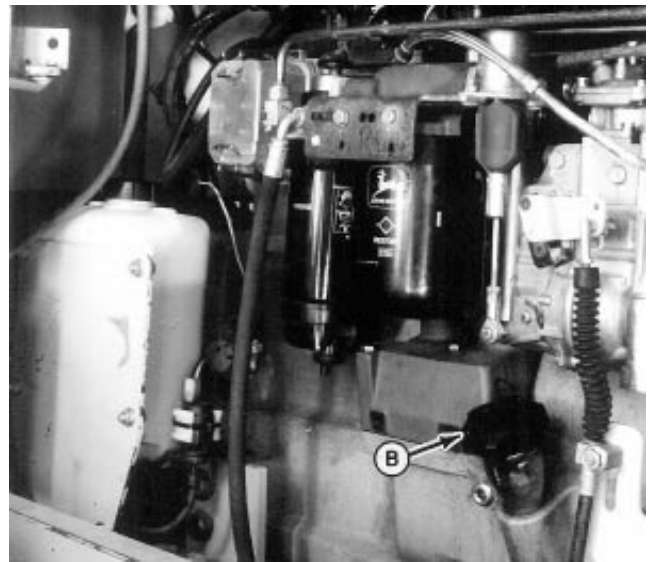
544G Shown

T7829AE -UN-31AUG92



624G Shown

T7829AF -UN-31AUG92



644G Shown

T100695 -UN-22MAR96

TX,60,JC1106 -19-18MAR96-2/2

CHECK RECOVERY TANK COOLANT LEVEL

With the engine cold, coolant level must be between HOT and COLD marks on the recovery tank.

If coolant is below the COLD mark, add coolant to the recovery tank.



CAUTION: Prevent possible injury from hot spraying water. **DO NOT** remove radiator filler cap unless engine is cool. Then turn cap slowly to the stop. Release all pressure before you remove cap.

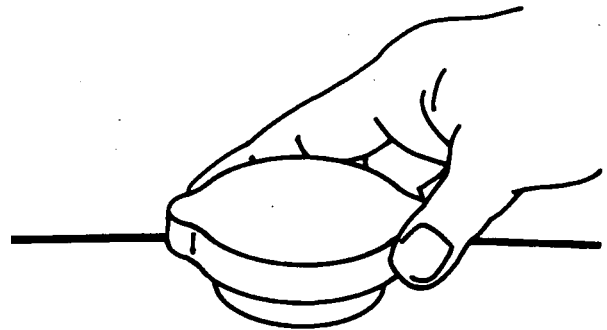
If recovery tank is empty, check for leaks. Repair as required. Add coolant to the radiator and the recovery tank.

Coolant level must be at bottom of the filler neck.

If recovery tank is full and radiator is low, check for leaks in radiator cap and hose connections between radiator and coolant recovery tank.



T8385AE -UN-15DEC94



T6274AQ -UN-18OCT88

TX,60,JC280 -19-16MAY95-1/1

CHECK HYDRAULIC OIL LEVEL

IMPORTANT: Prevent possible hydraulic pump damage. **DO NOT** operate engine without oil in the hydraulic reservoir.

1. Park machine on a level surface.
2. Lower equipment to the ground.

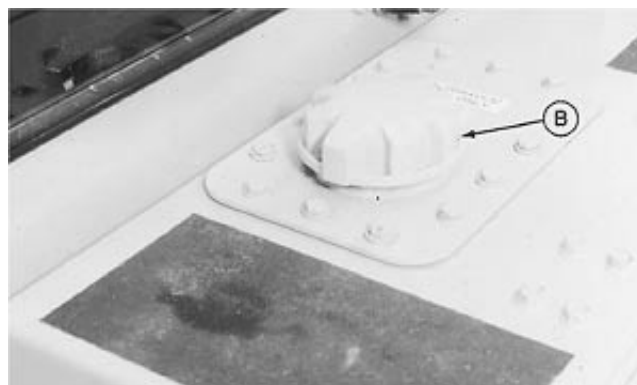
TX,60,DH2213 -19-16JUN93-1/3

3. When oil is cold, oil level must be in FULL range on sight glass (A).



TX,60,DH2213 -19-16JUN93-2/3

4. If necessary, add oil to filler cap (B). (See Fuels and Lubricants chapter.)
5. Install filler cap.



TX,60,DH2213 -19-16JUN93-3/3

CHECK TRANSMISSION OIL LEVEL

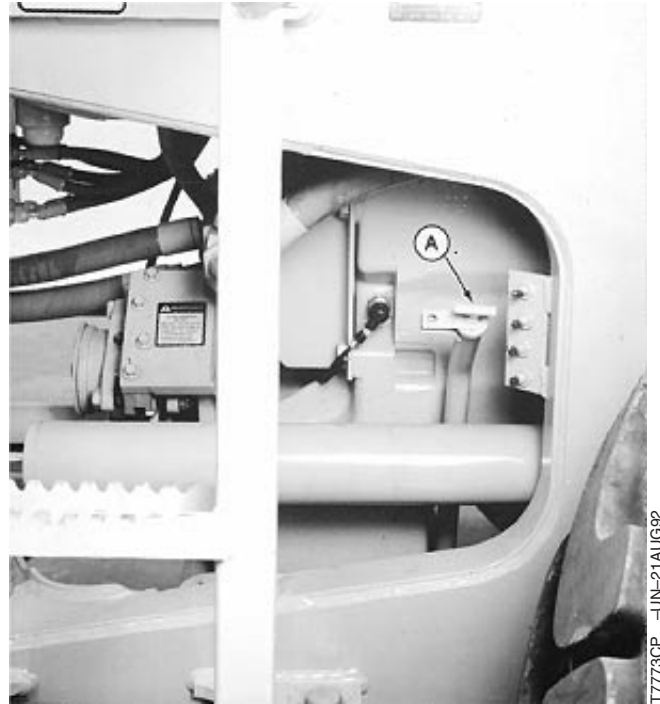
IMPORTANT: Prevent possible transmission damage. DO NOT operate engine when transmission oil level is low.

1. Before starting engine, check oil level on dipstick (A). If oil is to upper mark when oil is cold, there is sufficient oil to start the engine.
2. If necessary, add oil to filler tube. (See Fuels and Lubricants chapter.)
3. Install dipstick.
4. Start engine.
5. Engage service brakes. Move clutch cut-off switch up, to disengaged position.
6. Release park brake.
7. Move transmission control lever to 3rd speed forward "F" position.

Operate engine at fast idle for 30 seconds. Reduce engine speed to slow idle and place transmission control lever in neutral "N", for 15 seconds.

Repeat this step until transmission oil reaches normal operating temperature.

8. Move transmission control lever to neutral "N", and engage neutral lock. Lower all equipment to ground.
9. Engage park brake.
10. Release service brakes.
11. Check oil level with engine at slow idle. Oil must be between marks on dipstick.



624G Shown

Maintenance—Every 100 Hours

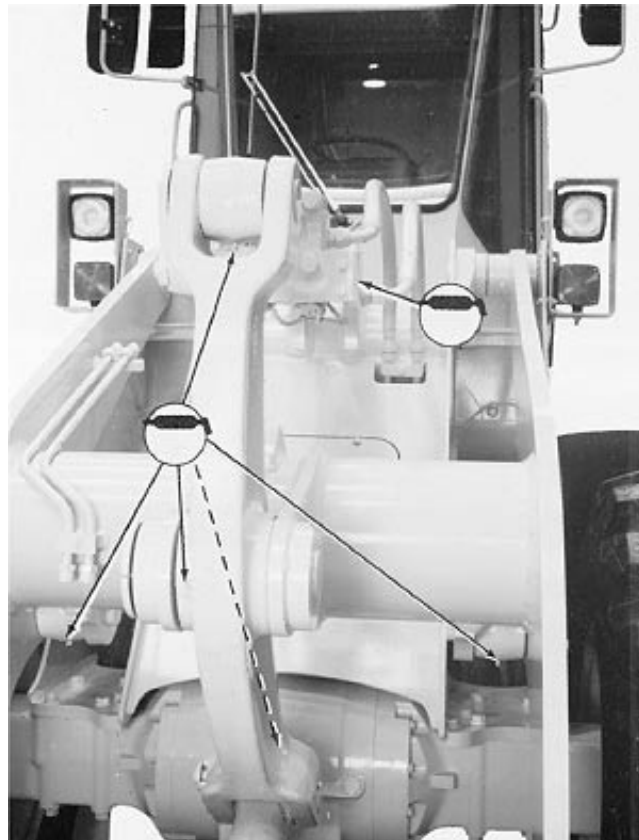
LUBRICANT BOOM, BUCKET, AND CYLINDER PIVOTS

CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

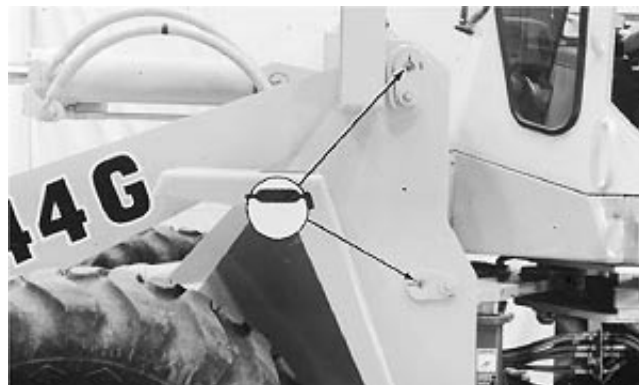
Lower bucket flat on ground.

Lubricate following 13 points until grease escapes around seals. (See Fuels and Lubricants chapter.)

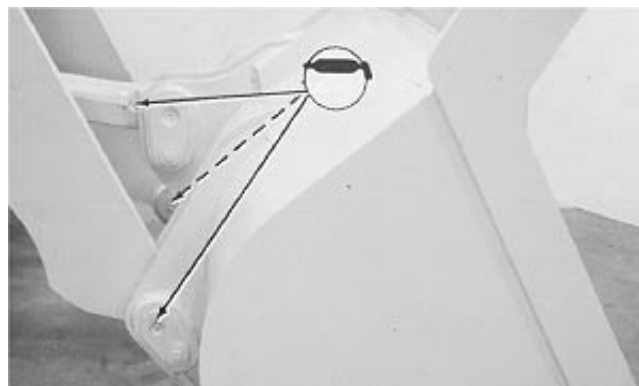
Lubricate every 10 hours or daily when operating in deep mud, water, or snow.



Six Points, 544G Shown



Four Points, 544G Shown



Three Points, 644G Shown

TX,70,DH2215 -19-16JUN93-1/1

LUBRICATE BOOM, BUCKET, AND CYLINDER PIVOTS—544G TC



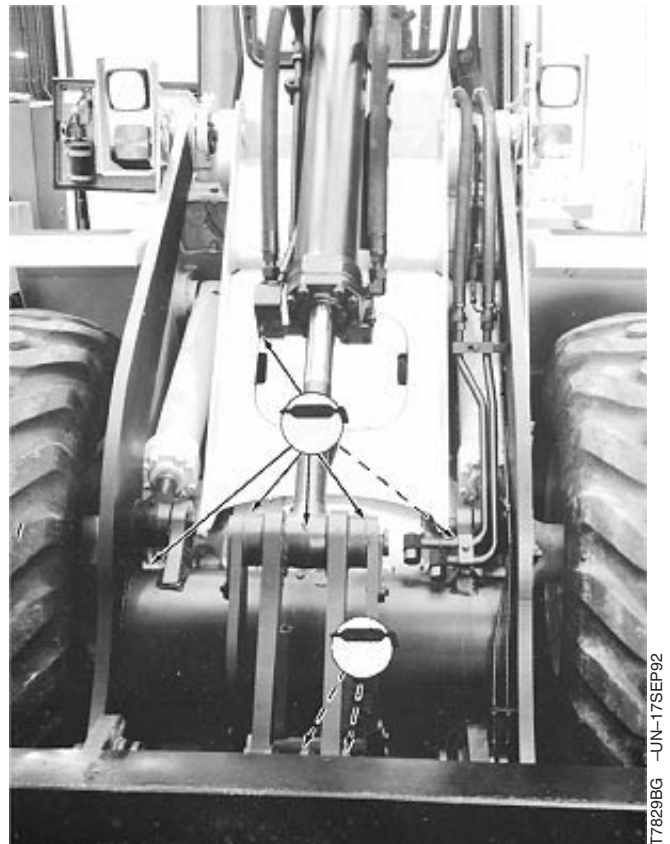
CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

Lower equipment to ground.

Lubricate following 17 points until grease escapes around seals. (See Fuels and Lubricants chapter.)



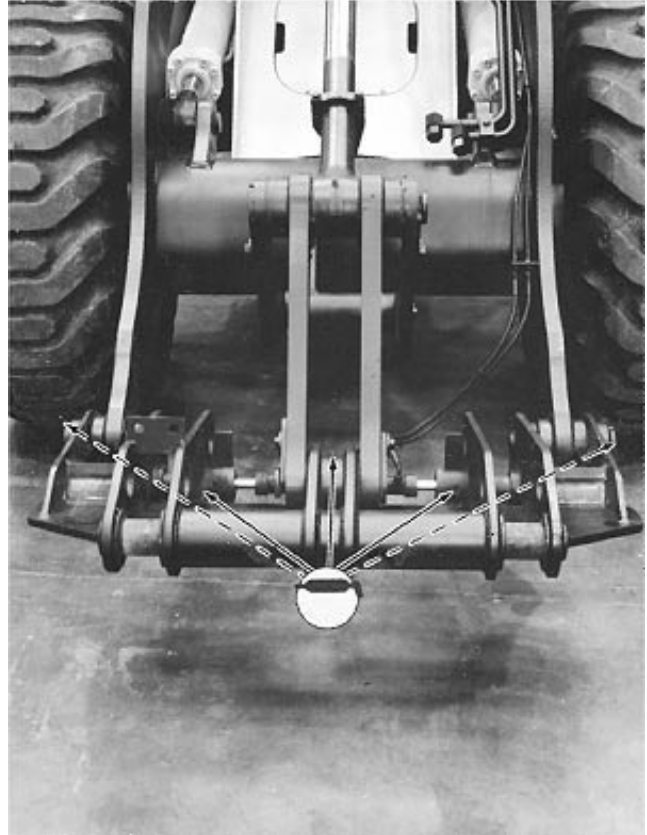
Four Points, Right Side Shown



Eight Points

TX,70,DH2290 -19-02OCT92-1/2

Lubricate every 10 hours or daily when operating in deep mud, water, or snow.



T7629BH -UN-17SEP92

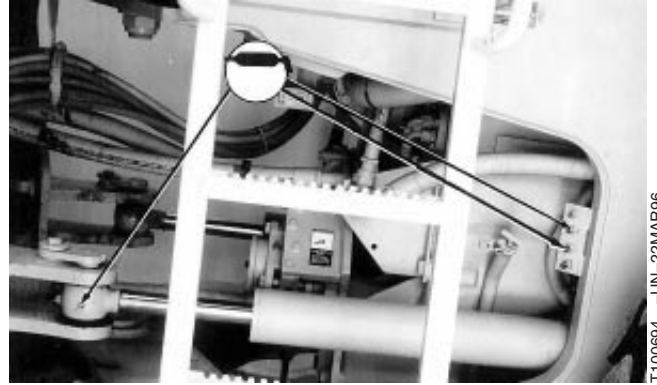
Five Points

TX,70,DH2290 -19-02OCT92-2/2

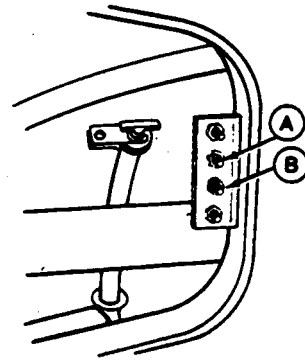
LUBRICATE STEERING CYLINDER PIVOTS

CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

Lubricate each point with three shots of grease. (See Fuels and Lubricants chapter.)



Four Points, 644G Left Side Shown



A—Right Steering Cylinder (Head End)
B—Left Steering Cylinder (Head End)

TX,70,JC1107 -19-18MAR96-1/1

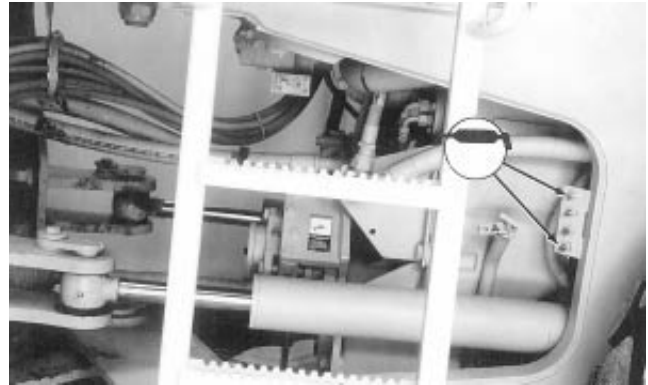
T1100694 -UN-22MAR96

T6597AB1 -UN-25OCT88

LUBRICATE OSCILLATING REAR AXLE

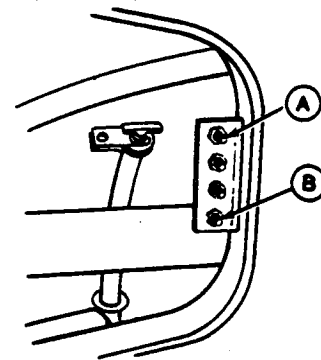
CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

Lubricate each point with 10 shots of grease. (See Fuels and Lubricants chapter.) Grease daily when operating in deep mud, water, or snow.



T100693 -UN-22MAR96

Two Points, 644G Shown



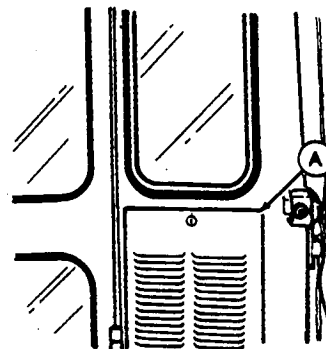
T6597AB -UN-25OCT88

A—Rear Axle Front Oscillating
Pivot
B—Rear Axle Rear Oscillating Pivot

TX,70,JC1108 -19-18MAR96-1/1

CHECK CAB FRESH AIR FILTER—IF EQUIPPED

1. Open door (A).



T6629AK -UN-20OCT88

TX,70,JC1056 -19-24JAN96-1/2

NOTE: If operating in dusty conditions, cab fresh air filter should be checked and cleaned as required.

2. Remove filter (B). Replace if damaged.

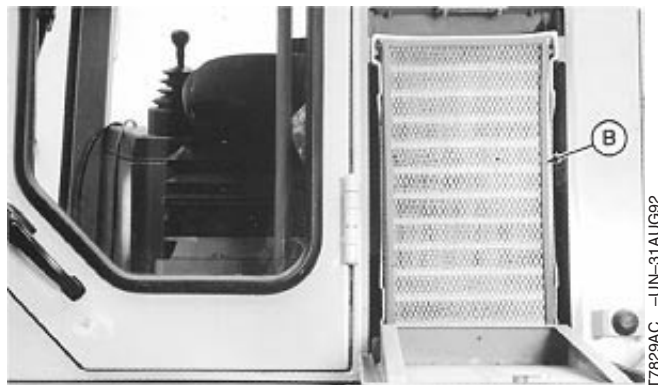
3. Clean filter in one of these ways:



CAUTION: Prevent possible injury from flying chips if compressed air is more than 210 kPa (2.1 bar) (30 psi). Reduce compressed air to less than 210 kPa (2.1 bar) (30 psi) when using for cleaning purposes. Clear area of bystanders, guard against flying chips, and wear personal protection equipment including eye protection.

- Tap filter on a flat surface with the dirty side down.
- Use compressed air opposite to the normal air flow.
- Wash the filter in warm, soapy water. Flush the filter. Let it dry before using the heater, defroster, or air conditioner.

4. Replace filter. Close door.



T7829AC -UN-31AUG92

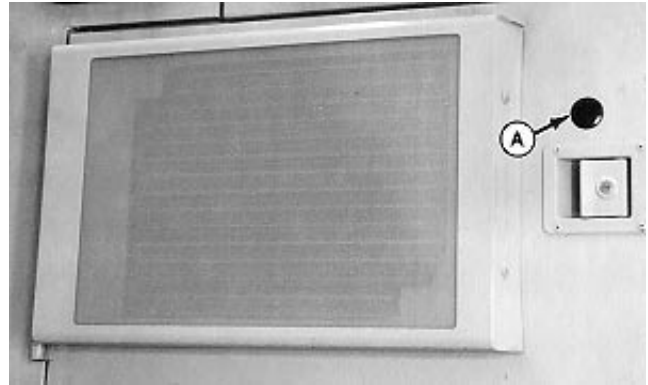
TX,70,JC1056 -19-24JAN96-2/2

Maintenance—Every 250 Hours

CHECK RECEIVER DRYER MOISTURE INDICATOR

IMPORTANT: Prevent possible compressor damage. If receiver dryer moisture eye color indicates "WET" (yellow), dryer is saturated and should be changed within the next 100 machine hours to prevent further buildup of moisture in the refrigerant.

1. Remove rubber plug (A) on right front panel.



TX,75,JC260 -19-16MAY95-1/2

2. Check sight glass (B) with engine running and air conditioning turned ON to determine if color indicates dryer is dry (green) or wet (yellow).
3. If wet (yellow), see your authorized dealer within the next 100 machine hours to service the receiver dryer.
4. Install plug.



TX,75,JC260 -19-16MAY95-2/2

CHANGE ENGINE OIL AND REPLACE FILTER

IMPORTANT: If fuel sulphur content exceeds 0.5 percent, change engine oil at 1/2 the normal interval.

NOTE: If engine has not run 250 hours before the season changes, change oil.

1. Run engine to warm oil.
2. Park machine on a level surface.
3. Lower bucket to ground.
4. Move transmission control lever to neutral "N". Engage neutral lock.



CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.

5. Engage park brake.
6. Turn key switch to STOP.

TX,75,JC1109 -19-18MAR96-1/4

7. Install hose on drain valve (A). Turn valve counterclockwise with a 1/4 in. hex key wrench. Allow oil to drain into a container. Dispose of waste oil properly.



624G Shown

T7853AI -UN-08OCT92

TX,75,JC1109 -19-18MAR96-2/4

8. Turn filter (A) counterclockwise to remove.
9. Clean mounting surface. Apply thin film of oil to gasket of new filter.
10. Install new filter. Turn filter clockwise by hand until gasket touches mounting surface.
11. Tighten 1/2—3/4 turn more.
12. Tighten drain valve.
13. Remove filler cap (B).
14. Fill engine with oil. (See Fuels and Lubricants chapter.)

SPECIFICATION	
Includes filter change:	
544G, LL, TC, 624G	19 L (20 qt)
644G	24 L (25 qt)

15. Install filler cap.

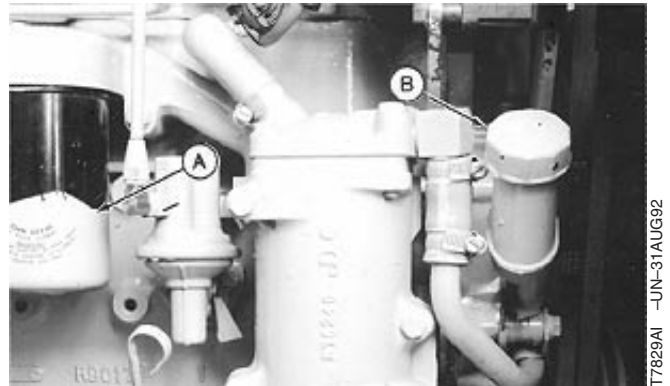
IMPORTANT: Before starting engine after a filter change, crank engine for 10 seconds without starting to refill filter and prelubricate turbocharger.

16. Remove engine shut-off fuse.

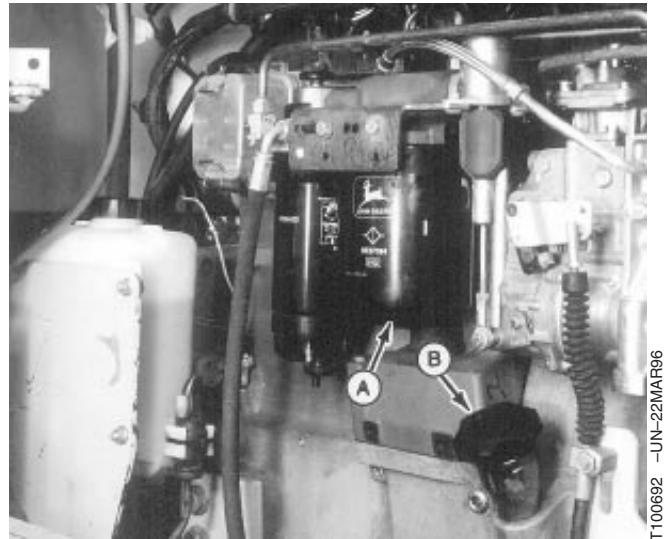
Crank engine for 10 seconds using starting motor.
Install engine shut-off fuse.
17. Start engine and run at slow idle.
18. Check that engine oil pressure light on monitor goes out and audible alarm stops immediately. If not, stop engine immediately and find cause.
19. Stop the engine. Check oil level. The engine is full when oil level is in the cross hatched area on the dipstick.



544G Shown



624G Shown



644G Shown

20. Check for any leakage at filter. Tighten filter only enough to stop leakage.

TX,75,JC1109 -19-18MAR96-4/4

CHECK RADIATOR COOLANT LEVEL



CAUTION: Prevent possible injury from hot spraying water. **DO NOT** remove radiator filler cap unless engine is cool. Then turn cap slowly to the stop. Release air to relieve all pressure before you remove cap.

1. Slowly remove cap. Coolant level must be at bottom of the filler neck.

NOTE: If radiator coolant level is low, check for leaks on radiator cap, and hose connections between radiator and coolant recovery tank.

2. Add coolant, if necessary.
3. Install filler cap.



T6642EK -UN-01NOV88

TX,75,DH3501 -19-29NOV94-1/1

Maintenance—Every 500 Hours

LUBRICANT FRONT DRIVELINE

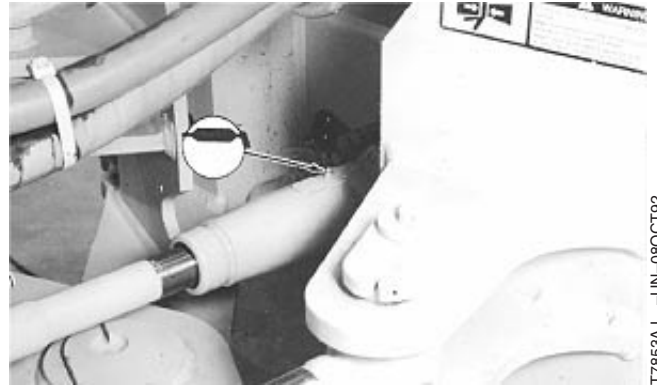


CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

NOTE: To prevent plug loss, lubricate the machine when it is fully articulated or half articulated and **NOT** in the straight position.

Lubricate until grease escapes around vent holes in drive shaft end. (See Fuels and Lubricants chapter.)

NOTE: Grease daily when operating in deep mud, water, or snow.



One Point

T7853AJ -UN-08OCT92

TX,80,JC1139 -19-23MAY96-1/1

CHECK AIR INTAKE HOSES

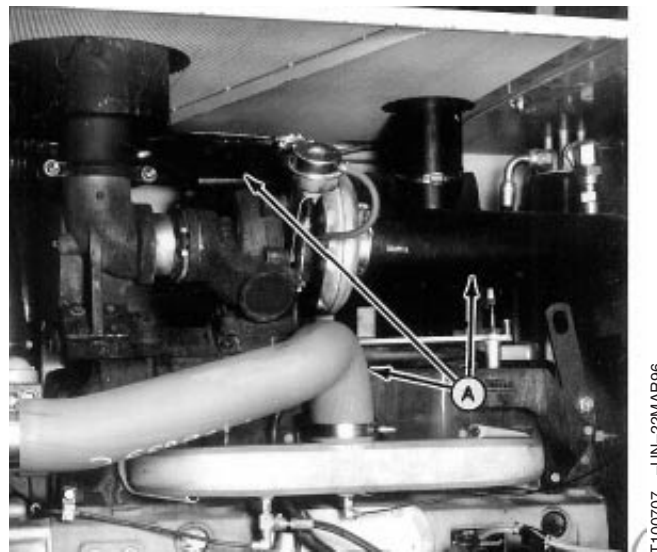
Check hoses for cracks (A).

Tighten hose clamps.



544G Shown

T7829BD -UN-17SEP92



644G Shown

T100707 -UN-22MAR96

TX,80,JC1110 -19-18MAR96-1/1

CHECK BATTERY ELECTROLYTE LEVEL AND TERMINALS



CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

NEVER check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

ALWAYS remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

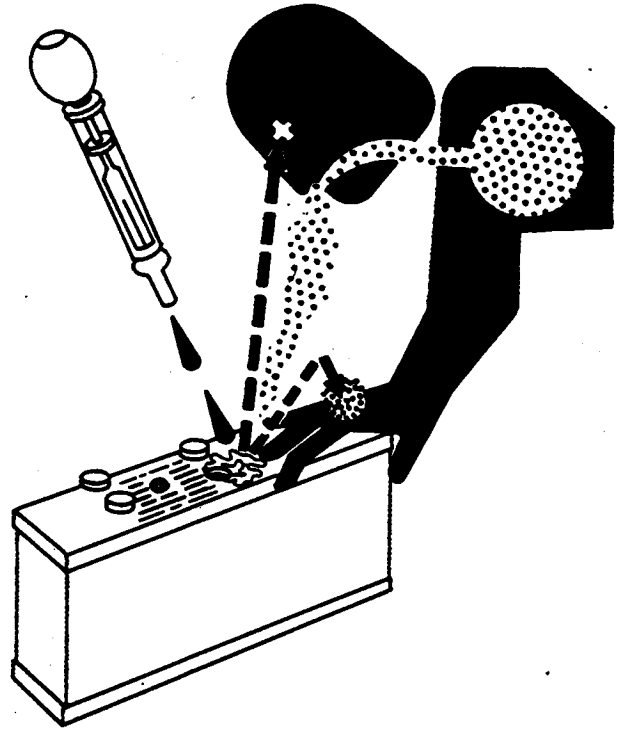
- Filling batteries in a well-ventilated area.
- Wearing eye protection and rubber gloves.
- Avoiding breathing fumes when electrolyte is added.
- Avoiding spilling or dripping electrolyte.
- Use proper jump start procedure.

If you spill acid on yourself:

- Flush your skin with water.
- Apply baking soda or lime to help neutralize the acid.
- Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

- Do not induce vomiting.



TS203 -UN-23AUG88

- Drink large amounts of water or milk, but do not exceed 1.9 L (2 quarts).
- Get medical attention immediately.

1. Remove battery box cover.

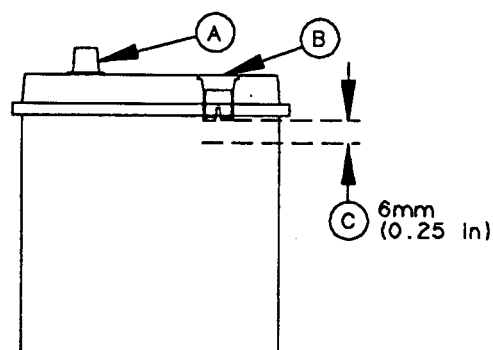
TX,75,DH1574 -19-28APR93-2/4

IMPORTANT: If water is added to batteries during freezing weather, batteries must be charged after water is added to prevent batteries from freezing. Charge battery using a battery charger or by running the engine.

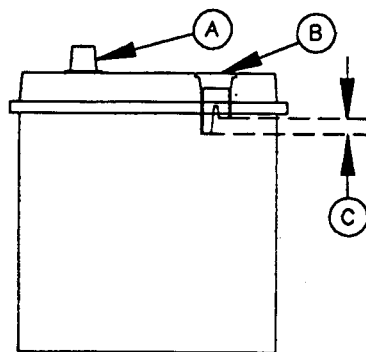
2. Fill each cell to within specified range with distilled water. DO NOT overfill.

CAUTION: Prevent possible injury. ALWAYS remove grounded (-) battery clamp first and replace it last.

3. Disconnect battery clamps, grounded clamp first.



T6996DB -UN-10FEB89

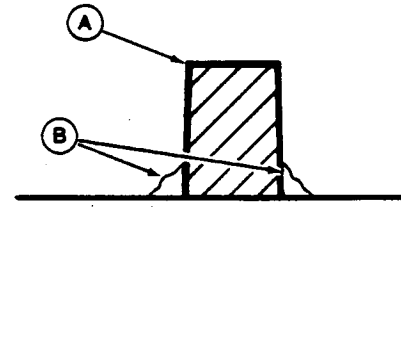


T6996DA -UN-10FEB89

A—Battery Post
B—Fill Tube
C—Electrolyte Level Range

TX,75,DH1574 -19-28APR93-3/4

4. Clean battery terminals (A) and clamps with a stiff brush.
5. Apply lubricating grease (B) around battery terminal base only.
6. Install and tighten clamps, grounded clamp last.



T6758AA -JUN-21OCT88

TX,75,DH1574 -19-28APR93-4/4

CHECK COOLANT



CAUTION: Prevent possible injury from hot spraying water. **DO NOT** remove radiator cap unless the engine is cool. Then loosen cap slowly to the stop. Release all pressure before removing cap.

1. Turn cap slowly to the stop to release pressure. Then remove cap.

NOTE: A coolant strip test, available from your dealer, provides a simple, effective way to check freeze point and molybdate/nitrite levels. These results can be compared to the SCA chart to determine the amount of coolant conditioner in your system.

2. Add TY16004 John Deere Coolant Conditioner or equivalent non-chromate conditioner/rust inhibitor, following instructions on container. Drain enough coolant from the radiator to allow room for the conditioner.

SPECIFICATIONS	
544G Cooling system capacity	Approx. 24 L (25 qt)
624G Cooling system capacity	Approx. 25 L (26 qt)
644G Cooling system capacity	Approx. 28 .5 L (30 qt)

NOTE: Add conditioner every 500 hours or 6 months, or if you replace 1/3 or more of coolant.

John Deere Liquid Coolant Conditioner does not protect against freezing.

DO NOT add John Deere liquid coolant conditioner to a cooling system already equipped with an operational filter conditioner system. Too much conditioner in a cooling system may cause silicate-dropout. When this happens, a gel-type despot is created which can restrict coolant passages in the radiator and engine, resulting in engine overheating.



T101279 -19-14MAY96



TS281 -UN-29AUG88

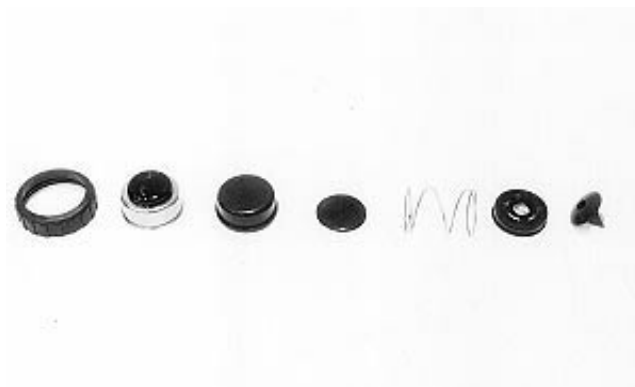
REPLACE PRIMARY FUEL FILTER (WATER SEPARATOR)

1. Turn filter assembly (A) counterclockwise to remove. Allow sediment to drain into a container. Dispose of waste properly.
2. Turn sediment bowl (B) counterclockwise to remove from filter assembly.
3. Rotate retaining ring around filter element counterclockwise 1/4 turn. Lifting ring as it is rotated helps get it past retaining detent. Ring should drop down and release filter from base.
4. Remove hand primer from fuel filter base. Disassemble hand primer assembly and clean out any debris.



624G Shown

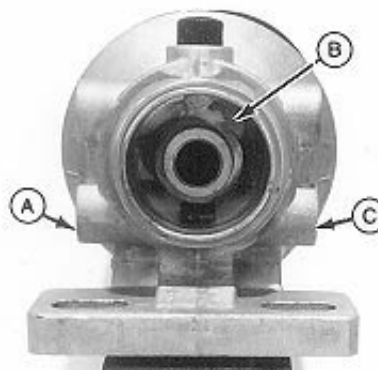
T7829AR -UN-31AUG92



T8387AE -UN-17DEC94

TX,80,JC427 -19-18JAN96-1/2

5. Remove fuel inlet line (A) and drain plug (C).
6. Flush any debris from filter base (B).
7. Install fuel inlet drain plug and fuel inlet line.
8. Assemble primer assembly and install onto new fuel filter base.
9. Install new filter. (Follow instructions on filter.)
10. Bleed fuel system. (See Bleeding Fuel System in Maintenance chapter.)



T8387AD -UN-17DEC94

TX,80,JC427 -19-18JAN96-2/2

REPLACE FINAL FUEL FILTER—544G, 624G

1. Turn filter assembly (A) counterclockwise to remove. Allow sediment to drain into a container. Dispose of waste properly.
2. Clean filter base.
3. Install new filter. (Follow instructions on filter.)
4. Bleed fuel system. (See Bleeding Fuel System in Maintenance chapter.)



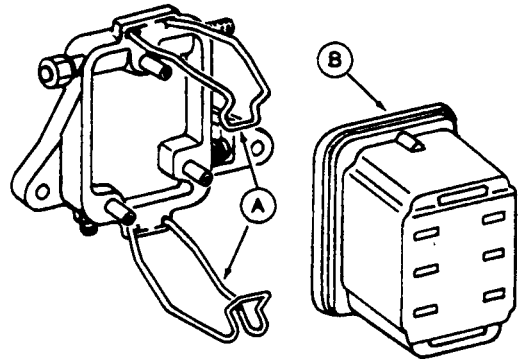
544G Shown

T7829AS -JUN-31AUG92

TX,80,DH2506 -19-02OCT92-1/1

REPLACE FINAL FUEL FILTER—644G

1. Loosen clamps (A) to remove filter (B).
2. Clean filter base.
3. Install new filter. Tighten clamps.
4. Bleed fuel system. (See Bleeding Fuel System in Maintenance chapter.)



TX,80,DH2225 -19-29AUG92-1/1

T7034AH -JUN-01MAY89

REPLACE HYDRAULIC SYSTEM RETURN FILTER

1. Remove hydraulic reservoir filler cap.

TX,80,JC1111 -19-18MAR96-1/2

2. Turn filter (A) counterclockwise to remove.
3. Clean mounting surface. Apply thin film of oil to gasket of new filter.
4. Install new filter. Tighten filter 3/4—1 full turn after seal contacts mounting base.
5. Fully loosen filter element. Repeat step 4.
6. Start engine. Check for leaks around the filter base. Tighten filter only enough to stop leaks.
7. Stop engine. Check oil level.



644G Shown

T100705 -UN-22MAR96

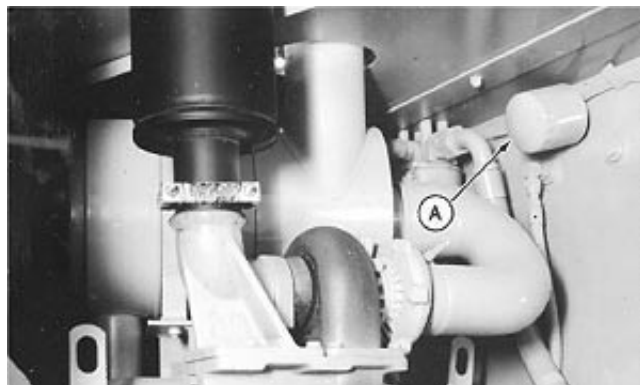
TX,80,JC1111 -19-18MAR96-2/2

REPLACE HYDRAULIC RESERVOIR BREATHING FILTER

Hydraulic reservoir breathing filter is located on back side of reservoir under the hood.

TX,80,JC1112 -19-18MAR96-1/2

1. Turn filter (A) counterclockwise to remove.
2. Install new filter.



T7829BE -UN-17SEP92

544G Shown



T100708 -UN-22MAR96

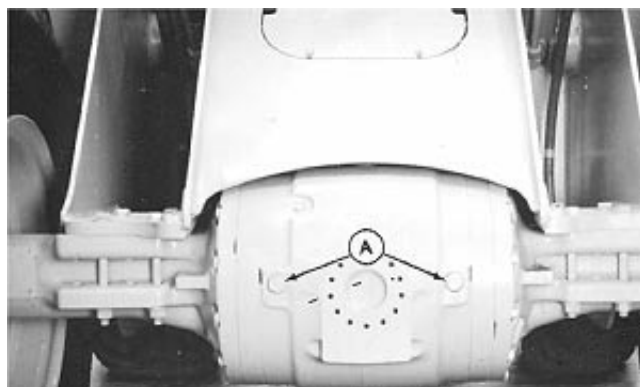
644G Shown

TX,80,JC1112 -19-18MAR96-2/2

CHECK FRONT AND REAR DIFFERENTIAL OIL LEVEL—IF EQUIPPED WITH STANDARD AXLE

NOTE: Each differential housing has three sumps. Fill center housing slowly to let oil drain into all sumps.

1. Loosen plugs (A). If oil seeps from plugs, differential oil level is OK. If not, remove plugs.
2. Oil must be to bottom of opening.
3. If necessary, add oil. (See Fuels and Lubricants chapter.)
4. Install or tighten plugs.



T7853AK -UN-08OCT92

Front Differential Shown



T6570AC2 -UN-20OCT88

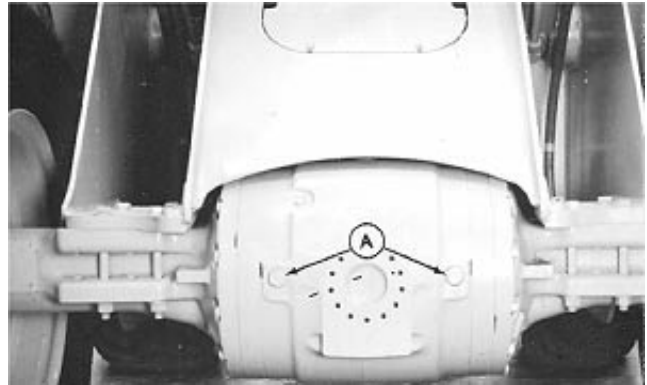
Rear Differential Shown

TX,80,DH2552 -19-23JUN93-1/1

CHECK FRONT AND REAR DIFFERENTIAL OIL LEVEL—IF EQUIPPED WITH DIFFERENTIAL LOCK AXLE

⚠ CAUTION: Prevent possible injury from hot spraying oil. Slowly loosen plugs to relieve any air pressure.

1. Remove plugs (A). Oil must be to bottom of opening. If not, install plugs.
2. Start engine.
3. Hold down differential lock pedal for 1 minute with engine running at slow idle.
4. Stop engine.
5. Slowly remove plugs. Oil must be to bottom of opening. If not, install plugs and repeat steps 2—4 until oil seeps from opening.
6. If necessary, add oil to hydraulic reservoir. (See Fuels and Lubricants chapter.)



Front Differential Shown



Rear Differential Shown

TX.80,DH2965 -19-23JUN93-1/1

Maintenance—Every 1000 Hours

LUBRICATE REAR DRIVELINE

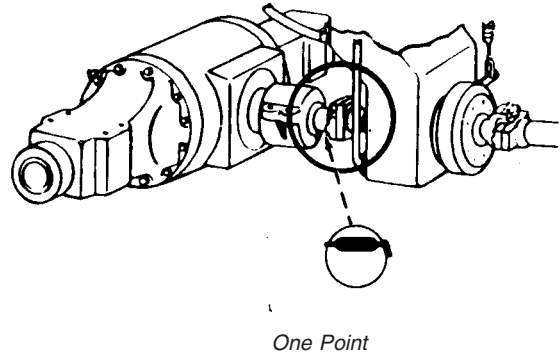


CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

NOTE: To prevent plug loss, lubricate the machine when it is fully articulated or half articulated and **NOT** in the straight position.

Lubricate until grease escapes around vent holes in drive shaft end. (See Fuels and Lubricants chapter.)

NOTE: Grease daily when operating in deep mud, water, or snow.



T7516BG -UN-11JUN91

TX,85,DH2477 -19-31JUL92-1/1

CHECK ENGINE SPEEDS

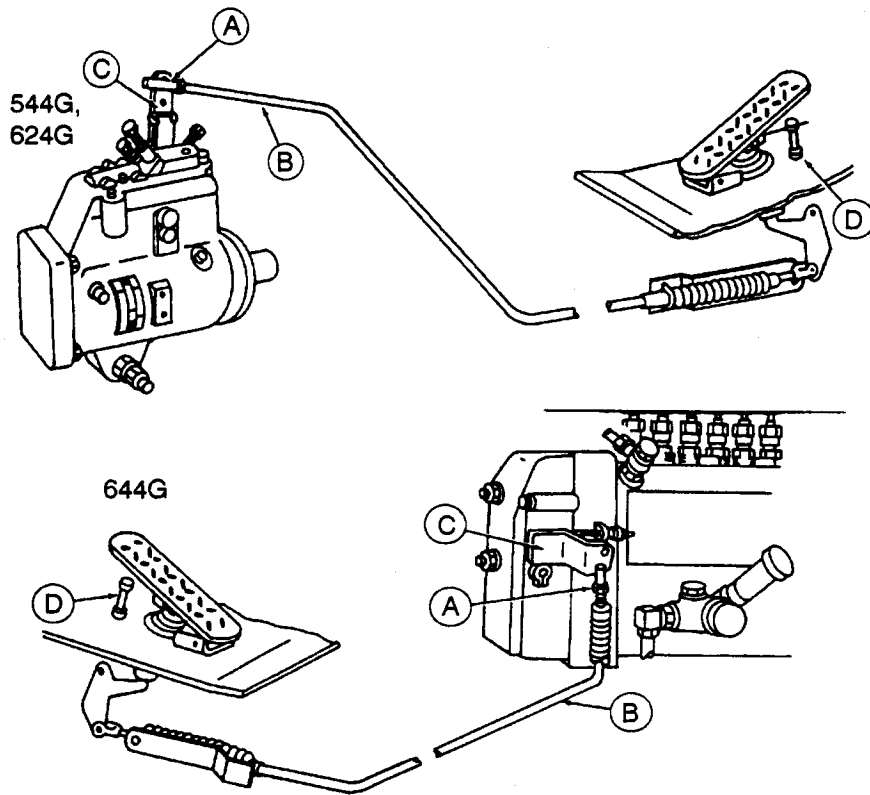
1. Warm engine to normal operating temperature.
2. Connect a tachometer and check engine speeds.

SPECIFICATIONS			
	544G, LL, TC	624G	644G
SLOW IDLE	825—875 rpm	825—875 rpm	775—825 rpm (S.N. -544523)
			875—925 rpm (S.N. 544524-)
FAST IDLE	2350—2400 rpm	2300—2350 rpm	2300—2350 rpm

If engine speeds need adjustment, check engine speed linkage. If speeds still need adjusting, see your authorized dealer.

TX,85,JC254 -19-29NOV94-1/1

ADJUST ENGINE SPEED CONTROL LINKAGE



A—Swivel

B—Cable

C—Lever

D—Stop Screw

1. With accelerator pedal at slow idle, disconnect swivel (A) on speed control cable (B) and adjust until:

544G, LL, TC, and 624G: Injection pump lever (C) has 2—4 mm (0.08—0.16 in.) of override at the slow idle position. Connect cable to injection pump lever.

644G: Hole in injection pump lever just lines up with swivel at the slow idle position. Lengthen cable two turns. Connect to injection pump lever.

2. Depress accelerator pedal until injection pump lever is against fast idle stop and hold.
3. Adjust pedal stop screw (D) until it makes contact with the pedal. Release pedal.
4. 544G, LL, TC, and 624G: Shorten pedal stop screw until 2—4 mm (0.09—0.16 in.) override is obtained at the pump.

644G: Tighten lock nut.

REPLACE AIR CLEANER DUST UNLOADER VALVE

NOTE: A missing, damaged, or hardened dust valve will cause the air filter elements to be ineffective.

Replace dust valve (A).



624G Shown

T7773CQ -UN-21AUG92

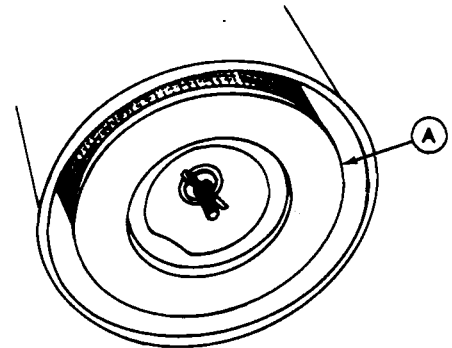
TX,85,DH2246 -19-26AUG92-1/1

REPLACE AIR CLEANER ELEMENTS

1. Remove cover.

TX,85,DH2245 -19-31JUL92-1/3

2. Remove wing nut to remove primary element (A).



T6119AF -UN-01NOV88

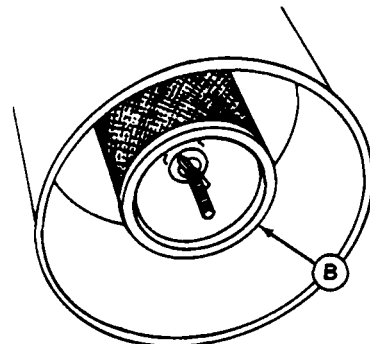
TX,85,DH2245 -19-31JUL92-2/3

3. Remove wing nut from 544G and 644G, or hex nut from 624G to remove secondary element (B).

4. Clean air cleaner canister.

5. Install new elements making sure secondary element is centered in canister.

6. Install cover.



T6119AG -UN-01NOV88

TX,85,DH2245 -19-31JUL92-3/3

CLEAN ENGINE CRANKCASE VENT TUBE (A)



544G Shown

T7829AK -UN-31AUG92



624G Shown

T7829AL -UN-31AUG92



644G Shown

T100691 -UN-22MAR96

TX,85,DH2230 -19-02OCT92-1/1

CHANGE TRANSMISSION OIL AND REPLACE FILTER

1. Operate machine under load until transmission oil reaches normal operating temperature.
2. Park machine on a level surface.
3. Lower bucket to ground.
4. Move transmission control lever to neutral "N". Engage neutral lock.



CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.

5. Engage park brake.



CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before changing oil.

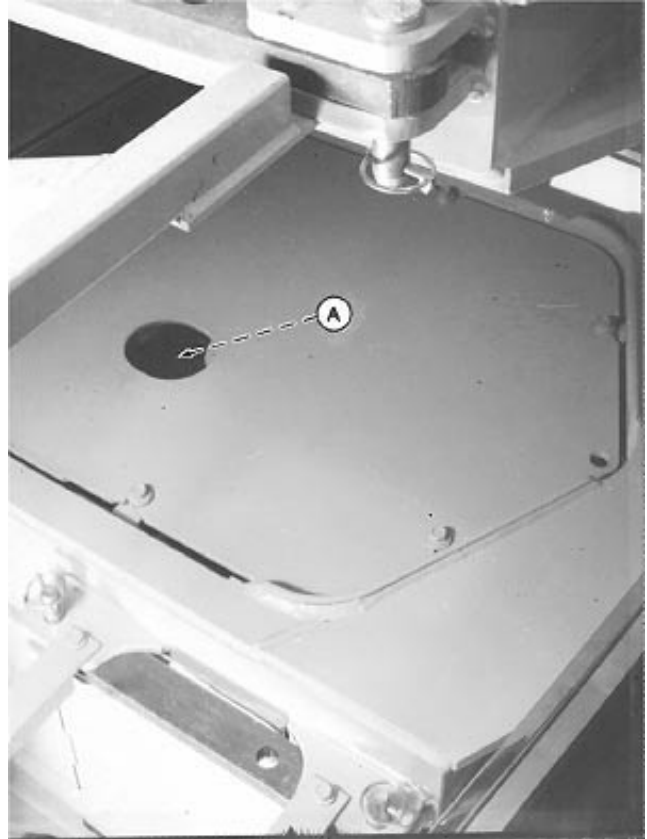
6. Install frame locking bar.

IMPORTANT: Turbocharger may be damaged if engine is not properly shut down.

7. Run engine at 1/2 speed for 2 minutes before stopping to avoid damage to turbocharger. Release accelerator pedal to slow idle.
8. Turn key switch to STOP. Let machine sit for approximately 10 minutes.

TX,85,JC1057 -19-24JAN96-1/4

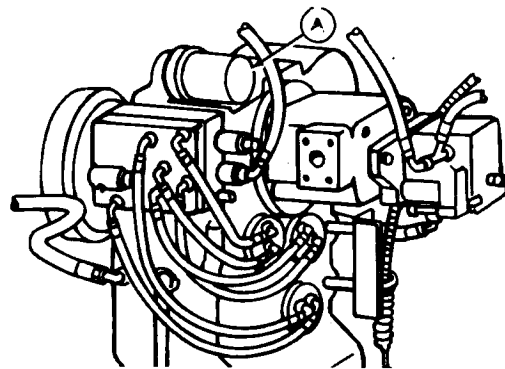
9. Remove plug (A), located inside hole in bottom guard, to drain oil. Allow oil to drain into a container. Dispose of waste oil properly.



TX,85,JC1057 -19-24JAN96-2/4

T7853AA -UN-23SEP92

10. Remove right panel under cab to gain access to transmission filter (A). Clear area around filter before removing. Turn filter counterclockwise to remove.
11. Clean mounting surface. Apply thin film of oil to gasket of new filter.
12. Install new filter. Turn filter clockwise by hand until gasket touches mounting surface.
13. Tighten 1/2 to 3/4 turn more.
14. Apply pipe sealant with TEFLON® to threads of transmission drain plug. Install drain plug.



TX,85,JC1057 -19-24JAN96-3/4

T7853AC -UN-06OCT92

15. Remove transmission dipstick (A).
16. Fill transmission with oil. (See Fuels and Lubricants chapter.)

SPECIFICATIONS	
Includes filter change	
544G, LL, TC,	9.5 L (10 qt)
624G	11 L (12 qt)
644G	14 L (15 qt)

17. Start engine and run for 2 minutes.
18. Move transmission control lever to neutral "N", and engage neutral lock.
19. Check oil level. Oil must be between marks on dipstick.
20. Check for leaks around the filter base. Tighten filter only enough to stop leaks.

TEFLON is a trademark of the DuPont Company.



624G Shown

TX,85,JC1057 -19-24JAN96-4/4

CHECK PARK BRAKE

IMPORTANT: The park brake is also designed to function as the secondary braking system. The park brake must be properly maintained and adjusted.

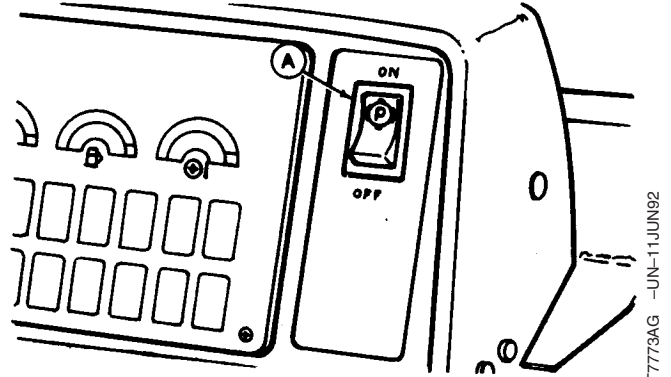
1. Start engine.

CAUTION: Prevent possible injury from sudden machine stop. Fasten seat belt for this check.

2. Fasten seat belt.
3. Press the SELECT switch until MPH reading is displayed.

TX,85,DH2561 -19-09OCT92-1/2

4. Move park brake switch (A) to OFF, and move transmission control lever to 2nd gear forward.
5. Drive machine at 5 mph and move park brake switch to ON. Machine must stop within 2 m (6 ft), and transmission must shift to neutral.
6. If necessary, adjust park brake.



TX,85,DH2561 -19-09OCT92-2/2

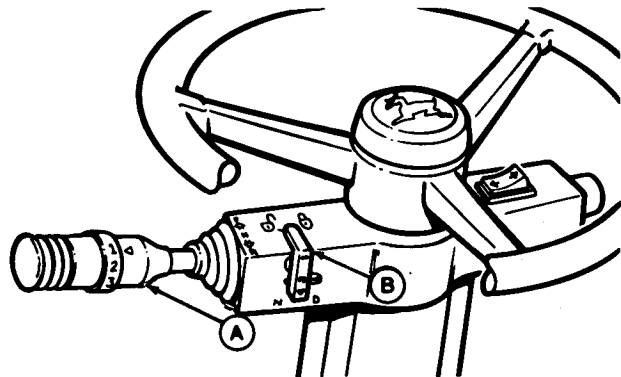
ADJUST PARK BRAKE

1. Park machine on a level surface.
2. Lower bucket to ground.

TX,85,JC1141 -19-23MAY96-1/3

3. Move transmission control lever (A) to neutral "N". Engage neutral lock (B).

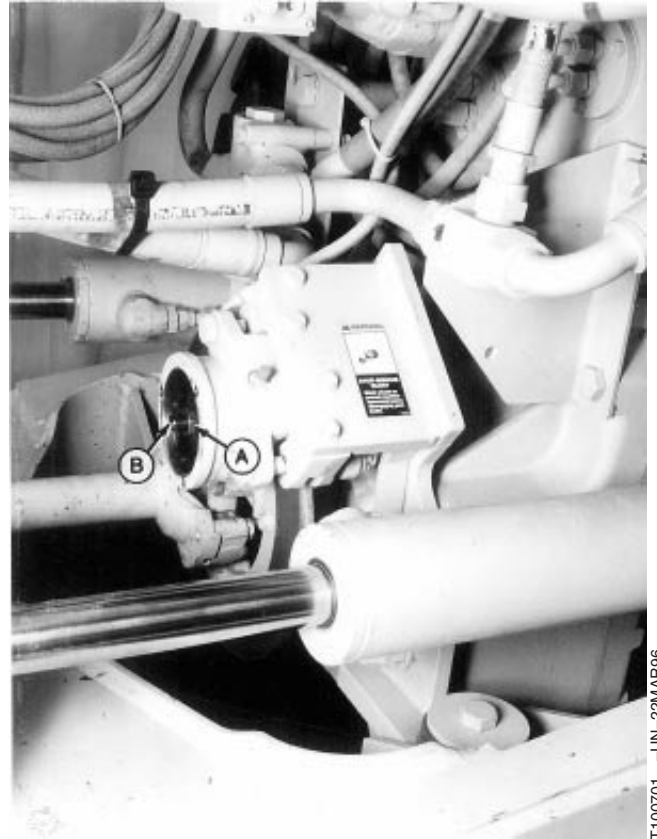
CAUTION: Prevent possible injury from unexpected machine movement. Never rely on loader bucket to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always block wheels to hold machine when working on park brake.



4. Install frame locking bar.
5. Stop engine; this will engage park brake.
6. Place blocks in front of and behind tires.

TX,85,JC1141 -19-23MAY96-2/3

7. Remove screws and remove sheet metal cover from brake. Loosen lock nut (A).
8. Loosen the 4 mounting capscrews that hold the park brake to the mounting bracket.
9. Tighten adjustment screw (B) to 100 N•m (75 lb-ft).
10. Tighten the 4 mounting capscrews to 70 N•m (50 lb-ft).
11. Back the adjustment screw off 180° (1/2 turn). (This will give approximately 0.5 mm (.02 in.) pad to disk clearance with park brake released and engine running.)
12. While holding the adjustment screw in place, tighten the lock nut.
13. Install sheet metal cover. Tighten cover screws.



TX,85,JC1141 -19-23MAY96-3/3

LUBRICATE FRAME HINGE PIVOTS

CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

Lubricate each point with three shots of grease. (See Fuels and Lubricants chapter.)



644G Shown

TX,85,JC1113 -19-18MAR96-1/1

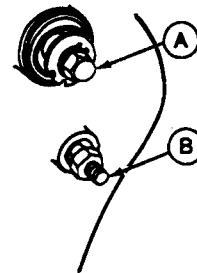
Maintenance—Every 2000 Hours

MEASURE AND ADJUST ENGINE VALVE LASH (CLEARANCE)—544G, LL, TC, 624G

1. Remove precleaner or air intake cover, hood, air cleaner bracket with air cleaner intake manifold, and engine crankcase vent tube.
2. Plug all openings.
3. Check crankcase ventilation tube for restriction. Clean with solvent or diesel fuel.
4. Remove rocker arm cover.

TX,85,DH2239 -19-31JUL92-1/5

5. Install JDE-81-1 Flywheel Turning Tool (A).
6. Turn flywheel until JDE-81-4 Timing Pin (B) goes into hole in flywheel.
7. Try to move both pushrods at number one cylinder. If both are loose, proceed with adjustment per chart on No. 1 TDC. If both pushrods at number six are loose, proceed with adjustment per chart on No. 6 TDC.

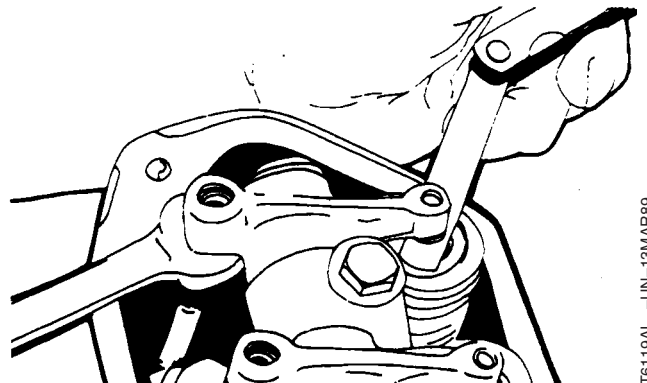


T6129AJ -UN-27OCT88

TX,85,DH2239 -19-31JUL92-2/5

NOTE: Valve clearance can be adjusted whether engine is hot or cold.

8. Measure and adjust valve clearance with No. 1 piston or No. 6 at TDC. To change piston position, pull timing pin out of flywheel, rotate flywheel 360°, and insert timing pin.

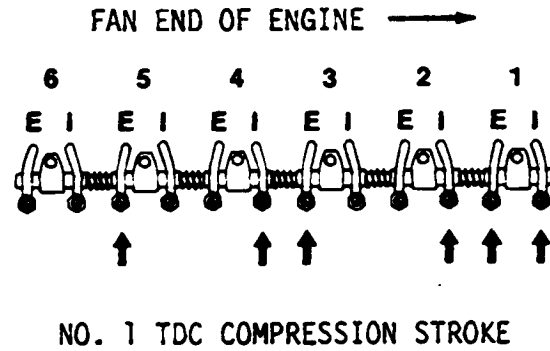


T6119AJ -UN-13MAR89

TX,85,DH2239 -19-31JUL92-3/5

9. Remove turning tool and timing pin.

544G, LL, TC, 624G VALVE CLEARANCE SPECIFICATIONS	
Intake Valves (I)	0.36 mm (0.014 in.)
Exhaust Valve (E)	0.46 mm (0.018 in.)

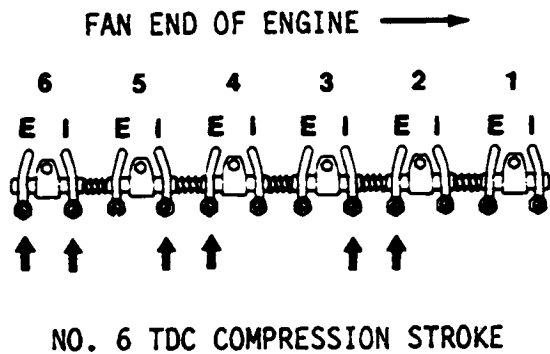


T6233AG -19-27JAN89

TX,85,DH2239 -19-31JUL92-4/5

544G, LL, TC, 624G VALVE CLEARANCE SPECIFICATIONS	
Intake Valves (I)	0.36 mm (0.014 in.)
Exhaust Valve (E)	0.46 mm (0.018 in.)

10. Clean cylinder head and rocker arm cover mating surfaces.
11. Install rocker arm cover gasket. Do not use sealant on the gasket.
12. Install rocker arm cover. Tighten screws to 10.8 N•m (96 lb-in.). Do not overtighten cap screws.
13. Install parts.



T6233AH -19-27JAN89

TX,85,DH2239 -19-31JUL92-5/5

ADJUST ENGINE VALVE LASH (CLEARANCE)—644G

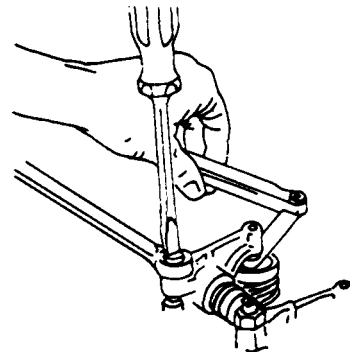
1. Remove precleaner, hood, air cleaner support with starting aid and air cleaner, engine crankcase vent tube.
2. Plug all openings.
3. Check crankcase ventilation tube for restriction. Clean with solvent or diesel fuel.
4. Remove rocker arm cover.
5. Remove plugs. Install JDE-81-I Flywheel Turning Tool (A) and JDE-81-4 Timing Pin (B).
6. Rotate flywheel until timing pin fits into hole in flywheel.
7. Try to move both pushrods at number one cylinder. If both are loose, proceed with adjustment per chart on No. 1 TDC. If both pushrods at number six are loose, proceed with adjustment per chart on No. 6 TDC.

TX,86,JC1142 -19-23MAY96-1/4

8. Measure and adjust valve clearance with No. 1 piston or No. 6 at TDC. To change piston position, pull timing pin out of flywheel, rotate flywheel 360°, and insert timing pin.

NOTE: Valve clearance can be adjusted whether engine is hot or cold.

9. Loosen hex nut.
10. Use screwdriver to adjust valve clearance.
11. Tighten hex nut and torque to $9.5 \pm 4 \text{ N}\cdot\text{m}$ ($84 \pm 36 \text{ lb-in.}$).

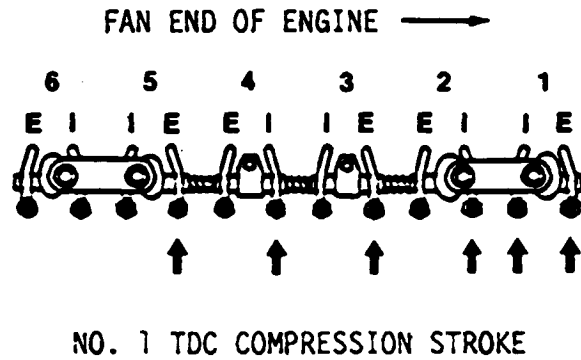


T6105BF -UN-24FEB89

TX,86,JC1142 -19-23MAY96-2/4

12. Remove flywheel turning tool and timing pin. Install plugs.

644G VALVE CLEARANCE SPECIFICATIONS	
Intake Valves (I)	0.38 mm (0.015 in.)
Exhaust Valve (E)	0.71 mm (0.028 in.)

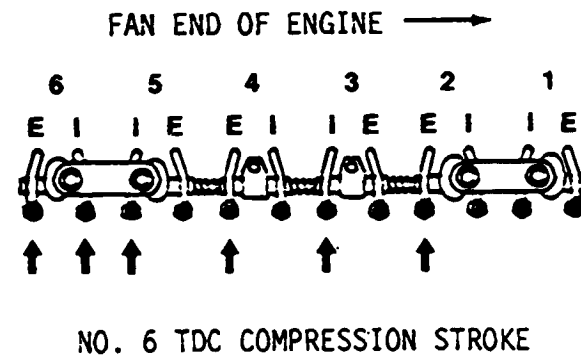


T6233AI -19-27JAN89

TX,86,JC1142 -19-23MAY96-3/4

644G VALVE CLEARANCE SPECIFICATIONS	
Intake Valves (I)	0.38 mm (0.015 in.)
Exhaust Valve (E)	0.71 mm (0.028 in.)

13. Clean cylinder head and rocker arm cover mating surfaces. Apply gasket cement to rocker arm cover.
14. Install rocker arm cover. Tighten cap screws to 10.8 N•m (96 lb-in).
15. Install parts.
16. Remove flywheel turning tool and timing pin. Install plugs.



T6233AJ -19-27JAN89

TX,86,JC1142 -19-23MAY96-4/4

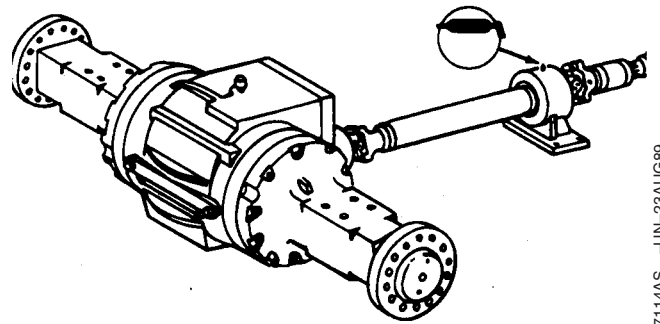
LUBRICATE FRONT DRIVELINE SUPPORT BEARING



CAUTION: Prevent possible injury from unexpected machine movement. Install frame locking bar before lubricating.

Lubricate until grease escapes around seal. (See Fuels and Lubricants chapter.)

NOTE: Grease every 250 hours if operating in deep mud or water.



One Point

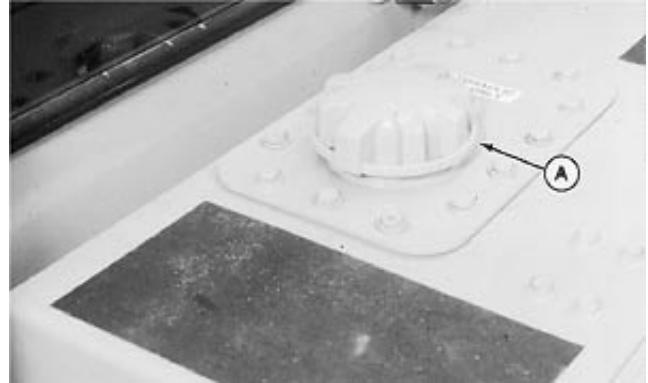
T7114AS -JUN-23AUG89

TX,86,JC1143 -19-23MAY96-1/1

Maintenance—Every 3000 Hours

CHANGE HYDRAULIC SYSTEM OIL

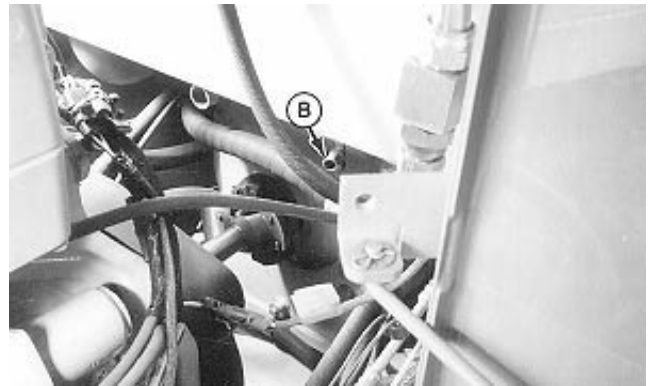
1. Remove hydraulic reservoir filler cap (A).



T8029AN -UN-15JUN93

TX,86,JC281 -19-16MAY95-1/3

2. Install hose on hydraulic reservoir drain valve (B). Loosen valve with a 1/4 in. hex key wrench. Allow oil to drain into a container. Dispose of waste oil properly.
3. Flush reservoir with diesel fuel.
4. Tighten drain valve.
5. Fill reservoir. (See Fuels and Lubricants chapter.)



T8385AF -UN-15DEC94

TX,86,JC281 -19-16MAY95-2/3

6. Install filler cap.

SPECIFICATIONS

544G, LL, TC	Approx. 76 L (80 qt)
624G	Approx. 102 L (108 qt)
644G	Approx. 115 L (122 qt)

7. Check oil level in sight glass (C). Oil should be in FULL range.

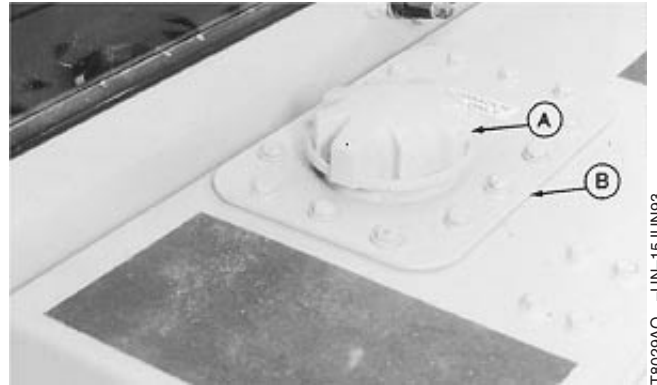


T7773CC -UN-10AUG92

TX,86,JC281 -19-16MAY95-3/3

CLEAN HYDRAULIC SUCTION STRAINER

1. Remove hydraulic reservoir filler cap (A).
2. Remove cap screws and cover (B).
3. Inspect gasket and replace if necessary.

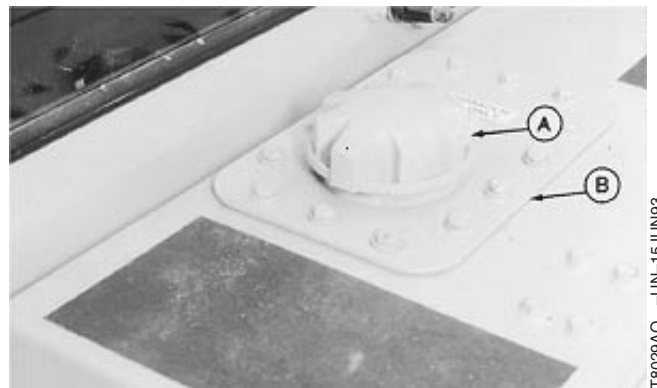


TX,86,DH2963 -19-16JUN93-1/1

T8029AO -UN-15JUN93

REPLACE DIFFERENTIAL LOCK RETURN FILTER(S)—IF EQUIPPED

1. Remove hydraulic reservoir filler cap (A).
2. Remove cap screws and cover (B).
3. Inspect gasket and replace if necessary.



TX,86,DH2250 -19-16JUN93-1/2

T8029AO -UN-15JUN93

4. Turn filter(s) (C) counterclockwise to remove.
5. Clean mounting surface. Apply thin film of oil to gasket of new filter(s).
6. Install new filter(s). Turn filter(s) clockwise by hand until tight.
7. Install cover, cap screws, and filler cap.



TX,86,DH2250 -19-16JUN93-2/2

T7829BI -UN-21SEP92

CHANGE FRONT AND REAR DIFFERENTIAL OIL

1. Remove drain plug (A). Allow oil to drain into a container. Dispose of waste oil properly.

NOTE: It is normal for differential lock axles to be filled approximately 1—2 L (1—2 qt) above level plug.

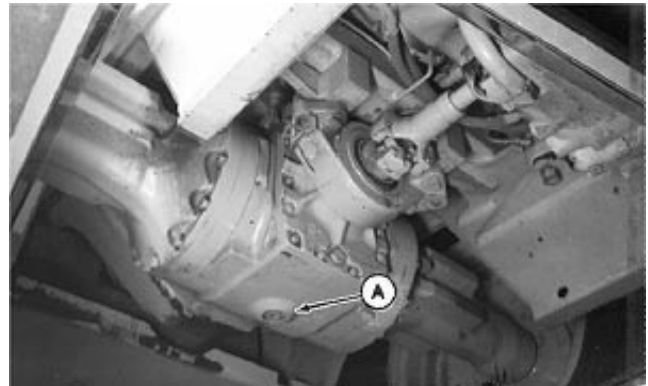
SPECIFICATIONS	
544G Front and Rear, each	Approx. 19 L (20 qt)
624G Front	Approx. 28 L (30 qt)
624G Rear	Approx. 19 L (20 qt)
644G Front and Rear, each	Approx. 28 L (30 qt)

2. Install drain plug.



T7853AO -UN-08OCT92

Front Differential Shown



T7853AP -UN-08OCT92

Rear Differential Shown

TX,87,JC1058 -19-24JAN96-1/5

3. Open service door (A).



T6523CY -UN-20OCT88

TX,87,JC1058 -19-24JAN96-2/5

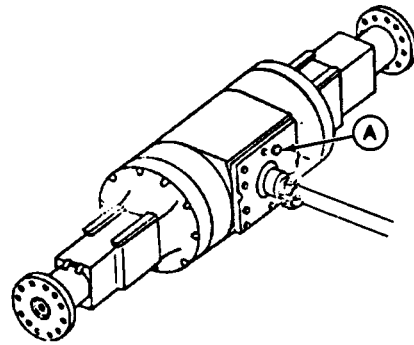
4. Remove fill plug (B) from front differential.



T7853AQ -UN-08OCT92

TX,87,JC1058 -19-24JAN96-3/5

5. Open left service door. Remove fill plug (A) from rear differential.

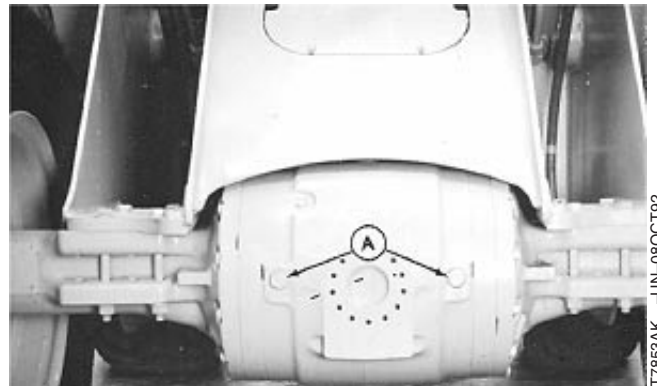


TX,87,JC1058 -19-24JAN96-4/5

T7853AR -UN-08OCT92

NOTE: Each differential housing has three sumps. Fill center housing slowly so oil drains into all sumps.

6. Add oil slowly until it appears in the bottom of the check level plugs (A). (See Fuels and Lubricants chapter.)
7. Install fill plugs.



Front Differential Shown



Rear Differential Shown

TX,87,JC1058 -19-24JAN96-5/5

T6570AC2 -UN-20OCT88

Maintenance

DRAINING THE COOLING SYSTEM



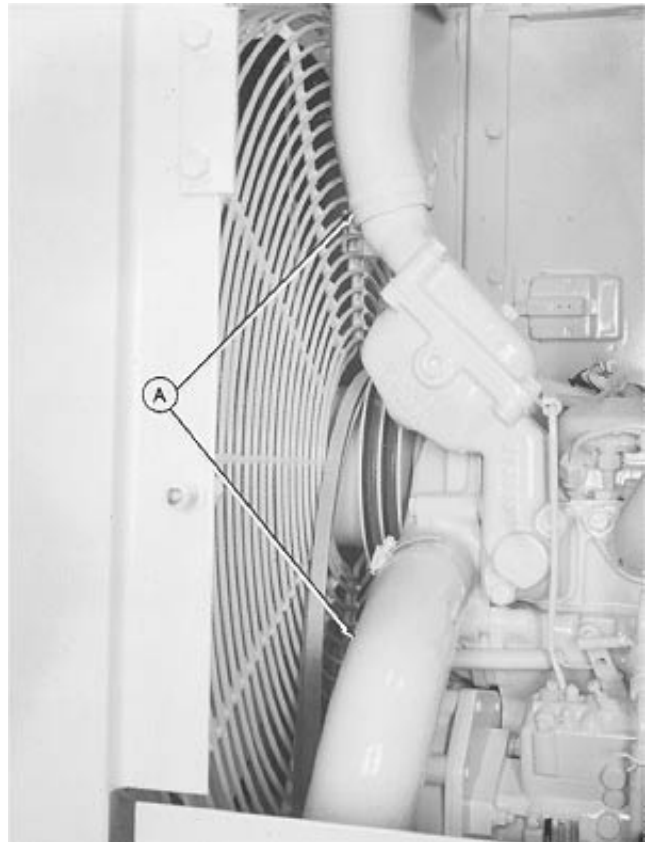
CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.



TS281 -UN-23AUG88

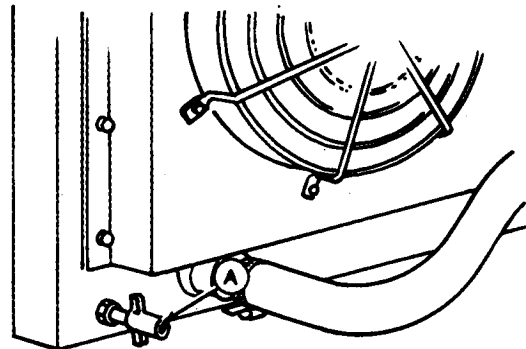
1. Check hoses (A) for cracks and leaks. Replace, if necessary.
2. Tighten clamps.
3. Check radiator and oil cooler for dirt, damage, leaks, and loose or broken mountings. Clean radiator and oil cooler fins.



T6523CC -UN-20OCT88

TX,90,JC1114 -19-18MAR96-1/4

4. Connect a hose to draincock (A) on radiator.
5. Turn draincock counterclockwise to open. Allow coolant to drain into a container. Dispose of used coolant properly.



T6518BN -UN-10FEB89

TX,90,JC1114 -19-18MAR96-2/4

6. 544G, 624G: Remove plug (A) to drain engine block. Allow coolant to drain into a container. Dispose of used coolant properly.



T7829AN -UN-31AUG92

544G, 624G Shown

TX,90,JC1114 -19-18MAR96-3/4

644G: Turn draincock (B) counterclockwise to drain engine block. Allow coolant to drain into a container. Dispose of used coolant properly.

7. Disconnect hose from recovery tank to drain the tank.



T100709 -UN-22MAR96

644G Shown

TX,90,JC1114 -19-18MAR96-4/4

DIESEL ENGINE COOLANT

The engine cooling system is filled to provide year-round protection against corrosion and cylinder liner pitting, and winter freeze protection to -37°C (-34°F).

The following engine coolant is preferred for service:

- John Deere PREDILUTED ANTIFREEZE/SUMMER COOLANT

The following engine coolant is also recommended:

- John Deere ANTIFREEZE/SUMMER COOLANT CONCENTRATE in a 40 to 60 percent mixture of concentrate and quality water.

Other low silicate ethylene glycol base coolants for heavy-duty diesel engines may be used if they meet one of the following specifications:

- ASTM D5345 (prediluted coolant)
- ASTM D4985 (coolant concentrate) in a 40 to 60 percent mixture of concentrate with quality water

Coolants meeting these specifications require use of supplemental coolant additives, formulated for heavy-

duty diesel engines, for protection against corrosion and cylinder liner erosion and pitting.

A 50 percent mixture of ethylene glycol engine coolant in water provides freeze protection to -37°C (-34°F). If protection at lower temperatures is required, consult your John Deere dealer for recommendations.

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol base engine coolant concentrate.

IMPORTANT: Do not use cooling system sealing additives or antifreeze that contains sealing additives.

COOLANT DRAIN INTERVALS

Drain and flush the cooling system and refill with fresh coolant every 24 months or 2000 hours of operation.

When John Deere PREDILUTED ANTIFREEZE/SUMMER COOLANT is used, the service interval may be extended to 36 months or 3000 hours of operation.

TX,90,JC1144 -19-23MAY96-1/1

FILLING THE COOLING SYSTEM

SPECIFICATIONS	
544G Cooling system capacity	Approx. 24 L (25 qt)
624G Cooling system capacity	Approx. 25 L (26 qt)
644G Cooling system capacity	Approx. 28.5 L (30 qt)

HOT WEATHER (above 95°C [35°F]): Antifreeze reduces cooling system efficiency. When maximum cooling system efficiency is required, completely drain and flush system. Refill with clean, soft water, and add RE23182 John Deere Coolant Conditioner or equivalent.

IMPORTANT: Use only permanent-type, low silicate, ethylene glycol base antifreeze in coolant solution. Other types of antifreeze may damage cylinder seals.

FREEZING TEMPERATURES: Fill with permanent-type, low silicate, ethylene glycol antifreeze (without stop-leak additive) and clean, soft water. Add RE23182 John Deere Coolant Conditioner or equivalent.

IMPORTANT: After filling radiator, operate engine to purge air from the engine block. When air is purged, the coolant level sensor in the radiator will turn warning alarm on, STOP indicator will flash, and engine coolant indicator will light. Shut off engine and add coolant immediately. Start engine and run until engine is at normal operating temperature. Stop engine and verify that radiator is completely full, and that surge tank is at normal level.

NOTE: All machines are shipped from the factory with a 50-50 mixture for protection to -37°C (-34°F). Adjust mixture accordingly to provide freeze protection for your machine.

TX,90,JC1145 -19-23MAY96-1/1

TEST THE COOLANT FREEZE—PROTECTION LEVEL

See your John Deere dealer for JT05460 SERVICE-GARD™ coolant and battery tester. Follow directions included with the tester.

If you operate your engine in extremely cold temperatures, see your John Deere dealer for information on arctic operation.



T85402 -UN-10NOV88

TX,90,JC1117 -19-18MAR96-1/1

DO NOT SERVICE INJECTION NOZZLES

IMPORTANT: Do not service or remove injection nozzles. The service life of the injection nozzles may be shortened by:

- Overheating
- Improper operation
- Poor quality fuel
- Excessive idling

If injection nozzles are not working correctly or are dirty, the engine will not run normally. (See your authorized dealer for service.)

T82,SKMA,A -19-28JUL94-1/1

DO NOT ADJUST INJECTION PUMP

IMPORTANT: Never steam clean or pour cold water on an injection pump while the engine is running, or while injection pump is still warm. To do so may cause seizure of pump.

Clean trash regularly from injection pump.

Adjusting the injection pump in any way not approved by the manufacturer will end the warranty. (See your copy of the John Deere warranty on this machine.)

Do not attempt to service an injection pump that is not operating correctly. (See your authorized injection pump service center.)

TX,DH,236 -19-06JUN91-1/1

CLEANING FUEL TANK OUTLET SCREEN

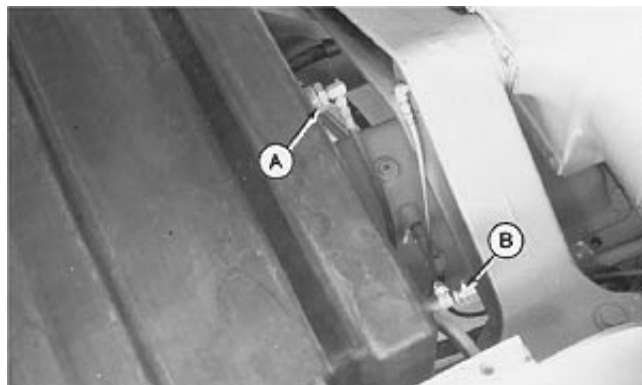
If fuel screen is plugged, debris must be removed and screen cleaned.

TX,90,DH2259 -19-12MAY93-1/2

1. Connect hose to fuel tank draincock (B).
2. Remove fuel tank cap.
3. Drain fuel from tank.
4. Disconnect fuel hose. Remove hose clamp (A).
5. Remove fitting to remove screen from inside fuel tank.
6. Remove debris from screen with clean solvent or diesel fuel, or install a new screen.
7. Flush debris out of fuel tank.
8. Clean fitting threads and threads in fuel tank with clean and cure primer.
9. Apply thread lock and sealer (maximum strength) on threads and shoulder of fitting. Apply a band of flexible sealant on threads and shoulder of fitting.
10. Install fitting in fuel tank until shoulder is tight against tank. Tighten hose clamp.

IMPORTANT: Wait 20 minutes before filling fuel tank to allow sealant to dry.

11. Fill fuel tank.

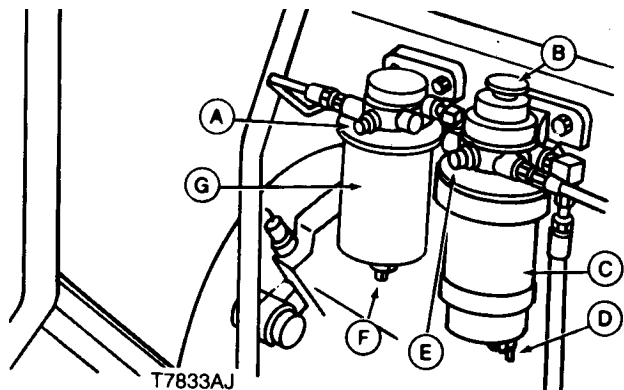


T6523BW1 -UN-20OCT88

TX,90,DH2259 -19-12MAY93-2/2

BLEEDING FUEL SYSTEM—544G, 624G

1. Place container under filters (C and G).
2. Loosen bleed screw (E).
3. Pump hand primer (B) until bleed screw (E) has solid stream of fuel.
4. Open bleed screw (A). Pump hand primer until bleed screw has solid stream of fuel coming from it. Tighten bleed screw on final fuel filter.



- A—Bleed Screw (Final Fuel Filter)
- B—Hand Primer
- C—Primary Fuel Filter (Water Separator)
- D—Drain Valve (Primary Fuel Filter)
- E—Bleed Screw (Primary Fuel Filter)
- F—Drain Valve
- G—Final Fuel Filter

T7833AJ -UN-10SEP92

TX,90,JC285 -19-16MAY95-1/1

BLEEDING FUEL SYSTEM—644G

1. Place container under primary fuel filter (F).
2. Loosen bleed screw (C), and push pump (D) until fuel free of bubbles flows from around bleed screw.
3. Tighten bleed screw.
4. Loosen bleed screw (B) from final fuel filter (A), and push pump (D) until fuel free of bubbles flows from around bleed screw.



T100696 -UN-22MAR96

A—Final Fuel Filter
B—Bleed Screw
C—Bleed Screw
D—Pump
E—Fuel Supply Line
F—Primary Fuel Filter
G—Drain Valve

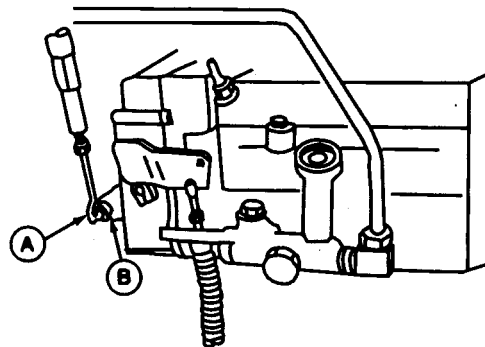
TX,90,JC1115 -19-18MAR96-1/1

ADJUSTING FUEL SHUT-OFF SOLENOID—644G

1. Disconnect linkage (A) from fuel shut-off lever (B).
2. Hold shut-off lever against lower position stop.
3. Adjust linkage so linkage aligns with hole in shut-off lever, and turn out two complete turns.

NOTE: Failure to have the shut-off lever against upper position stop can result in low engine horsepower.

4. Start engine and make sure shut-off lever is tight against upper position stop.



A—Linkage
B—Shut-off Lever

T8030AM -UN-21JUN93

TX,90,DH2534 -19-16JUN93-1/1

PRECAUTIONS FOR ALTERNATOR AND REGULATOR

When batteries are connected, follow these rules:

1. Disconnect negative (-) battery cable when you work on or near alternator or regulator.
2. DO NOT TRY TO POLARIZE ALTERNATOR OR REGULATOR.
3. Be sure alternator wires are correctly connected BEFORE you connect batteries.
4. Do not ground alternator output terminal.
5. Do not disconnect or connect any alternator or regulator wires while batteries are connected or while alternator is operating.
6. Connect batteries or a booster battery in the correct polarity (positive [+] to positive [+] and negative [-] to negative [-]).
7. Do not disconnect the batteries when engine is running and alternator is charging.
8. Disconnect battery cables before you connect battery charger to the batteries. If machine has more than one battery, each battery must be charged separately.

04T,90,C151 -19-20JUL92-1/1

SERVICE BATTERIES CAREFULLY



CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

- Filling batteries in a well-ventilated area.
- Wearing eye protection and rubber gloves.
- Avoiding breathing fumes when electrolyte is added.
- Avoiding spilling or dripping electrolyte.
- Use proper jump start procedure.

If you spill acid on yourself:

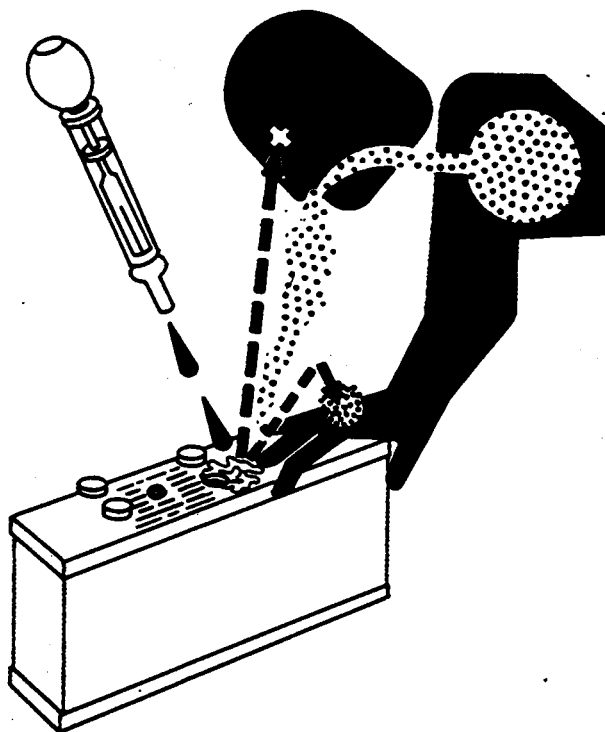
- Flush your skin with water.
- Apply baking soda or lime to help neutralize the acid.
- Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

- Do not induce vomiting.
- Drink large amounts of water or milk, but do not exceed 1.9 L (2 quarts).



TS204 -UN-23AUG88



TS203 -UN-23AUG88

- **Get medical attention immediately.**

If electrolyte spills on the floor, use one of the following mixtures to neutralize the acid: 0.5 kg (1 lb) baking soda in 4 L (1 gal) water, or 0.47 L (1 pt) household ammonia in 4 L (1 gal) water.

IMPORTANT: Electrolyte can damage paint and metal surfaces of your machine. Do not overfill the battery cells.

TX,90,DH1018 –19–30APR94–2/2

CHECKING ELECTROLYTE SPECIFIC GRAVITY



CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

- Filling batteries in a well-ventilated area.
- Wearing eye protection and rubber gloves.
- Avoiding breathing fumes when electrolyte is added.
- Avoiding spilling or dripping electrolyte.
- Use proper jump start procedure.

If you spill acid on yourself:

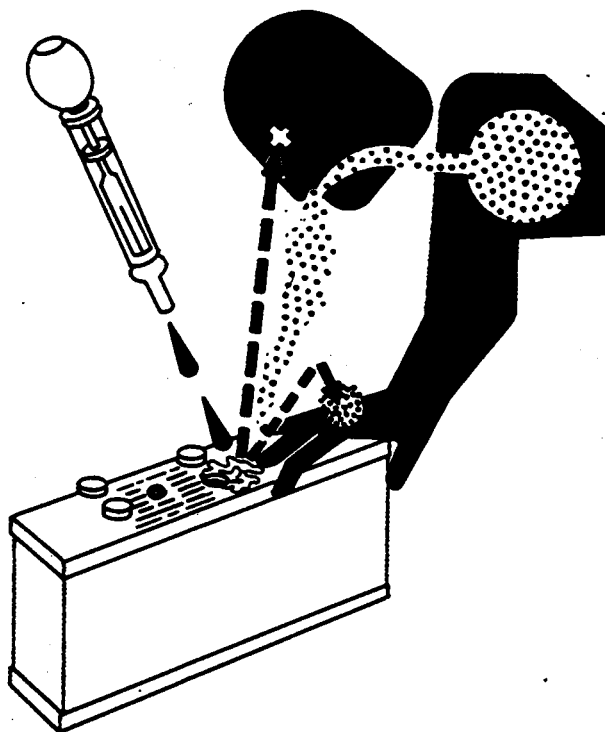
- Flush your skin with water.
- Apply baking soda or lime to help neutralize the acid.
- Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

- Do not induce vomiting.



TS204 -UN-23AUG88



TS203 -UN-23AUG88

- **Drink large amounts of water or milk, but do not exceed 1.9 L (2 quarts).**
- **Get medical attention immediately.**

Check the specific gravity of electrolyte in each battery cell.

04T,90,FF20 -19-12MAY93-2/3

See your John Deere dealer for JT05460 SERVICE-GARD[™] battery and coolant tester. Follow directions included with the tester.

A fully charged battery will have a corrected specific gravity reading of 1.260. If the reading is below 1.200, charge the battery.

NOTE: *In tropical areas, use 1.225 for the full charge reading. In cold areas, use 1.280 for the full-charge reading.*



T85402 -UN-10NOV88

04T,90,FF20 -19-12MAY93-3/3

USING BATTERY CHARGER



CAUTION: Prevent possible injury from exploding battery. Do not charge a battery if the battery is frozen or it may explode. Warm battery to 16°C (60°F). Disconnect battery ground (—) clamp before you charge batteries in the machine to prevent damage to electrical components.

IMPORTANT: Do not use a battery charger as a booster if a battery has a 1.150 specific gravity reading or lower. Turn off charger before connecting or disconnecting it.

A battery charger may be used as a booster to start engine.



TS204 -UN-23AUG88

TX,FF,121 -19-15MAR93-1/1

REPLACING BATTERIES

Your machine is equipped with a negative ground electrical system. It uses one or two 12-volt batteries. If one of the two batteries fails, both batteries must be replaced. Use only batteries meeting following specifications.

BCI Group Size: 27

544G, 624G:
625 cold cranking amps at -18°C (0°F)
160 minutes reserve capacity at 25 amps
644G:
950 cold cranking amps at -18°C (0°F)
180 minutes reserve capacity at 25 amps

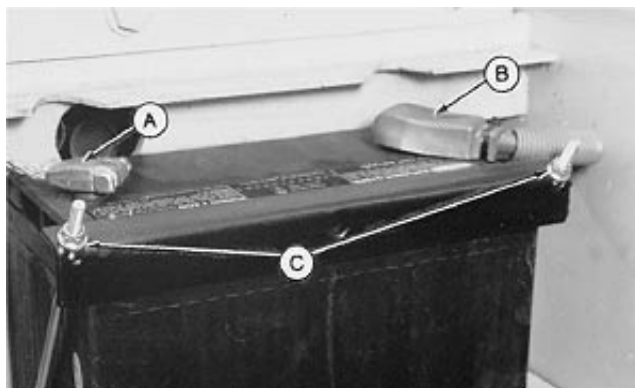
TX,90,JC1146 -19-23MAY96-1/1

REMOVING BATTERIES

1. Remove battery cover.

TX,90,DH1768 -19-06JUN91-1/2

2. Disconnect negative (-) battery cable (A) first, then positive (+) cable (B).
3. Remove nuts and washers (C) and hold down bracket.
4. Lift battery out of compartment.



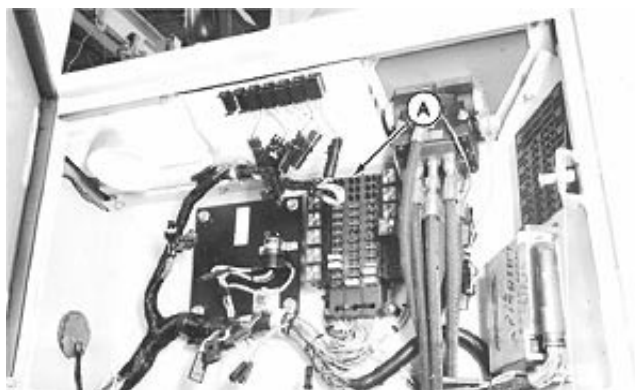
T6570AD2 -UN-20OCT88

TX,90,DH1768 -19-06JUN91-2/2

REPLACING FUSES

IMPORTANT: Install fuses with correct amperage rating to prevent electrical system damage from overload.

The fuse box (A) is in the electrical load center on the right side (outside) of the cab. Both fuses and circuit breakers are located in the load center.



T7853AS -UN-08OCT92

TX,90,DH2266 -19-02OCT92-1/1

FUSE (BLADE-TYPE) COLOR CODES

Amperage Rating	Color
1	Black
3	Violet
4	Pink
5	Tan
7-1/2	Brown
10	Red
15	Light Blue
20	Yellow
25	Natural (White)
30	Light Green

04T,90,J22 -19-28SEP92-1/1

RESETTING CIRCUIT BREAKERS

Air conditioning system contains two circuit breakers. If circuit breakers open because of a short circuit or overloading, air conditioner will shut off.

Turn off air conditioning switch. Wait a couple of minutes before restarting, to allow a cooling off period. Circuit breaker will reset itself. If circuit breaker opens repeatedly, see your John Deere dealer.

04T,90,C155 -19-06JUN91-1/1

REPLACING HALOGEN BULBS

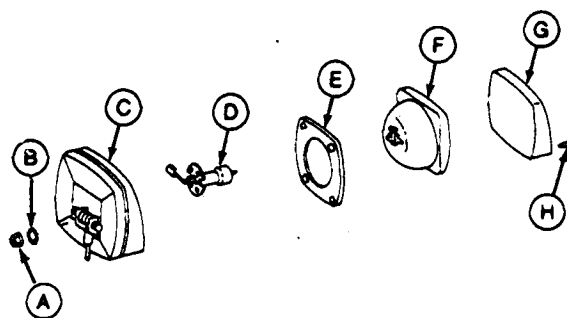
IMPORTANT: To get the correct lighting pattern, lens must be installed so the word "TOP" is on top when lamp is installed so wider section is on top when lamp is installed.

Before disassembling, remember how bezel and lens are installed with respect to mounting stud.



TX,90,RR,1725 -19-11MAR94-1/2

1. Remove four screws (H) to remove bezel (G) and lens (F).
2. Disconnect wiring lead and release retainer clip to remove bulb (D).
3. To disconnect ground wiring lead, push tab up, then pull connector from terminal.



A—Flange Nut
B—Lock Washer
C—Housing
D—Bulb
E—Gasket
F—Lens
G—Bezel
H—Screw

- IMPORTANT: Do not touch the halogen bulb with bare hands. Oil and moisture may cause premature bulb failure. Clean bulb using a soft, oil-free cloth and alcohol.**
4. Install new bulb so square notch is aligned with square tab on reflector back.
 5. Install retainer clip into locking tabs on reflector back.
 6. Connect wiring leads. Check wiring leads are free of clip.
 7. Install lens assembly (F) in housing (C) making sure wires are not crimped, or keeping lens assembly from seating on gasket.
 8. Install bezel so wider section is on top. Sealing flange must be inside housing on all four sides before tightening screws.
 9. Tighten screws alternately. Do not overtighten as screws may strip out plastic.

T6249AU -UN-19OCT88

TX,90,RR,1725 -19-11MAR94-2/2

CHANGING REVERSE WARNING ALARM VOLUME

IMPORTANT: The reverse warning alarm is set on high volume at the factory. It may be necessary to adjust the volume to meet local regulations.

NOTE: Alarm removed from machine for clarity of photograph.

To change alarm volume, move switch (A) to desired position.



TX,90,DH2566 -19-03FEB95-1/1

CHECKING NEUTRAL START SYSTEM



CAUTION: Avoid possible injury or death. DO NOT attempt to start machine unless you are sitting in operator's seat with the transmission control lever in neutral "N" position. DO NOT bypass or disable any of the starting system parts.

Engage park brake before attempting to start engine.

This machine has a neutral start switch that is activated by the transmission control lever.

Check the neutral start system to ENSURE that the machine:

1. WILL start with the transmission control lever in neutral "N" position.
2. WILL NOT start with the transmission control lever in forward "F" or reverse "R" position.

If starting system fails to operate correctly, have your John Deere dealer repair the system immediately.

TX,90,DH2566 -19-02OCT92-1/1

ADDING ATTACHMENTS/ACCESSORIES TO ROLL-OVER PROTECTIVE STRUCTURE (ROPS)

Do not add attachments or accessories to the ROPS without contacting your John Deere dealer for information. Improper attachment may impair the protection offered by the ROPS.

04T,90,K117 -19-16MAR88-1/1

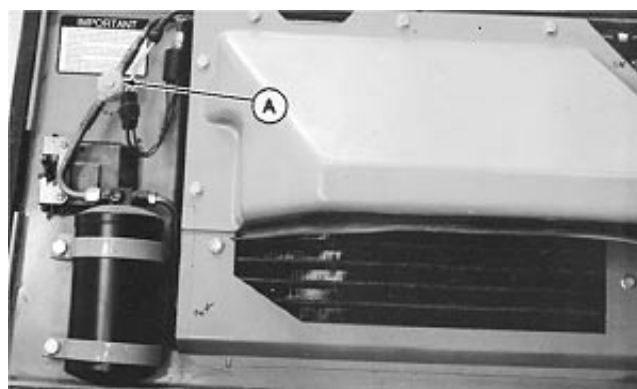
SERVICING AIR CONDITIONING SYSTEM

1. Check and adjust compressor belt tension.
2. Check compressor clutch engagement.
3. Check evaporator core for clogging.
4. Check air intake filters for clogging.
5. Check blowers for proper operation.
6. Check the condenser core to see that it is not partially or completely plugged with dirt or trash. Clean with compressed air or water when needed.
7. Run air conditioning system for several minutes.

TX,90,DH2539 -19-12MAY93-1/2

NOTE: Access door on right side of cab opened for clarity of drawing. Door must be closed to check air conditioning operation. Remove sight glass plug from door.

8. Check sight glass (A) on receiver dryer (from outside of cab). Bubbles must not be present in sight glass. If bubbles are present, see your authorized dealer for charging the air conditioning system.



T7829BL -UN-21SEP92

TX,90,DH2539 -19-12MAY93-2/2

CHECKING AND ADJUSTING COMPRESSOR BELT TENSION—IF EQUIPPED

1. A force of 111 N (25 lb force) halfway between pulleys must move belt 13 mm (0.5 in.).
2. To adjust tension, loosen mounting cap screws.
3. Apply force to FRONT compressor housing only (near the belt) until tension is correct.
4. Tighten cap screws.

TX,90,DH1756 -19-31JUL92-1/1

WELDING ON MACHINE

IMPORTANT: Disconnect battery ground strap or turn battery disconnect switch to "OFF" to prevent voltage spikes through alternator or monitor.

If machine is equipped with a controller (microprocessor) like Engine Controller (EC), Pump and Valve Controller (PVC) or Transmsision Controller disconnect harness connector from controller to prevent voltage spikes through microprocessor.

Connect welder ground clamp close to each weld area so electrical current does not arc inside any bearings, bushings or pins.

TX,90,JC1060 -19-25JAN96-1/1

INSPECTING PARK BRAKE PADS

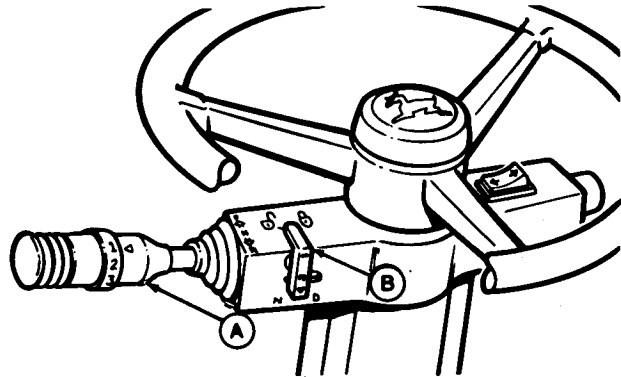
1. Park machine on a level surface.
2. Lower bucket to ground.

TX,90,DH2348 -19-19MAY93-1/3

3. Move transmission control lever (A) to neutral "N".
Engage neutral lock (B).



CAUTION: Prevent possible injury from unexpected machine movement. Never rely on transmission control lever alone to keep machine from moving. Machine can unexpectedly roll or move under power, resulting in death or serious injury. Always engage park brake to hold machine.

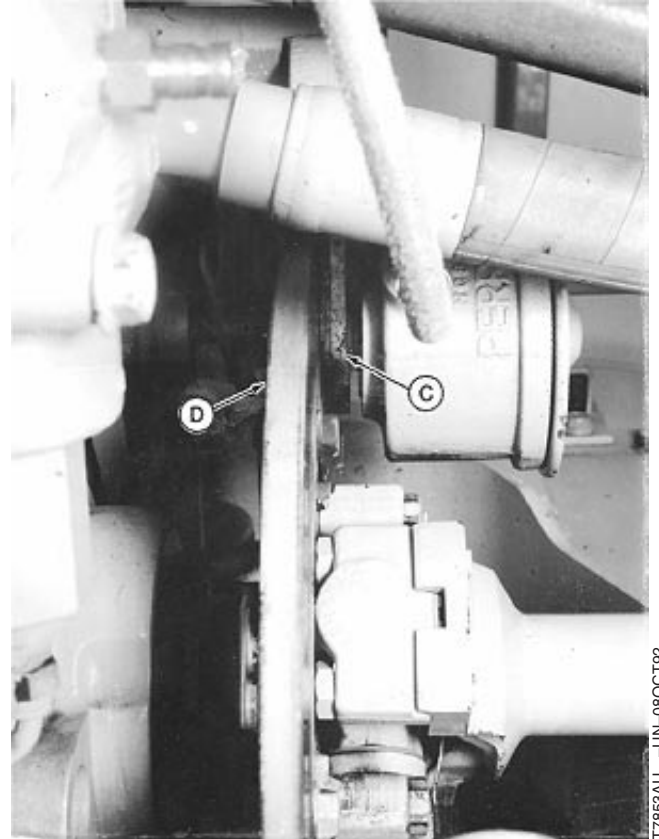


T7747BR -UN-19MAY92

4. Install frame locking bar.
5. Stop engine.

TX,90,DH2348 -19-19MAY93-2/3

6. Check the combined thickness of backing plates, brake pads (C), (2nd pad not shown) and disk (D). If thickness of backing plates, pads, and disk is less than 29.0 mm (1.20 in.) or if grooves are worn off pads, replace pads. New backing plates, pads and disk measure 35.0 mm (1.40 in). (See your authorized dealer.)



TX,90,DH2348 -19-19MAY93-3/3

EXTERNAL SERVICE BRAKE INSPECTION



CAUTION: Prevent possible injury from hot spraying oil. Slowly loosen plug to relieve any air pressure.

Do first inspection at 5000 hours followed by 1000 hours inspection intervals after the first 5000 hours inspection.

If the service brakes are subjected to severe duty, inspect more frequently.

TX,90,JC263 -19-29NOV94-1/4

1. Remove brake inspection port plug (A).



T6523BZ -UN-25OCT88

TX,90,JC263 -19-29NOV94-2/4

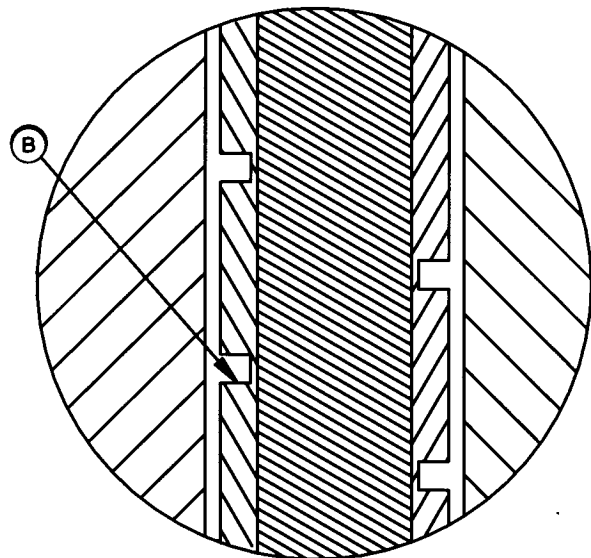
2. Inspect the brake linings (A) on brake disk.



T6138AZ -UN-25OCT88

TX,90,JC263 -19-29NOV94-3/4

3. Remove axle housing and replace brake disc if oil grooves (B) on facing material are no longer visible.
4. If further inspection of brake elements or replacement of brake linings is necessary, see your authorized dealer.



T8137AC (CV)

T8137AC -UN-03DEC93

TX,90,JC263 -19-29NOV94-4/4

CHECKING BRAKE ACCUMULATOR

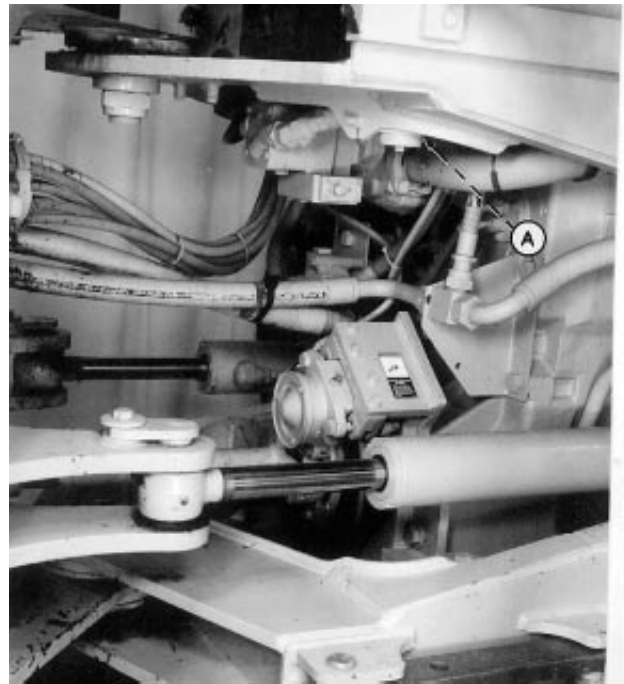
1. Start engine.
2. Run engine for 1 minute at slow idle.

TX,90,JC1116 -19-18MAR96-1/2

3. Quickly apply brake pedal as hard as possible, and hold down.

If brake low pressure indicator light comes on, brake accumulator (A) pressure is low.

4. Replace brake accumulator.



T100704 -UN-22MAR96

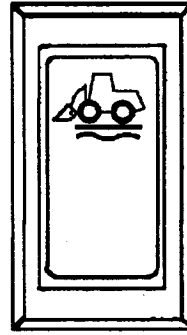
TX,90,JC1116 -19-18MAR96-2/2

CHECKING RIDE CONTROL ACCUMULATOR—IF EQUIPPED



CAUTION: The boom will jump upward during this check. Make sure area around bucket is clear.

1. Start engine.
2. Push ride control switch to OFF position.
3. Raise boom to maximum height and hold control lever over relief for 2 seconds.
4. Lower boom and bucket to ground and stop engine.



T7829AV -UN-08SEP92

TX,90,DH2560 -19-12MAY93-1/2

5. Turn key switch to ON position. Turn ride control switch to ON. Boom will jump upward, approximately 200 mm (8.0 in.) as accumulator (A) pressure is released.
6. If ride control accumulator has lost gas charge, go to your authorized dealer.



T7853AV -UN-08OCT92

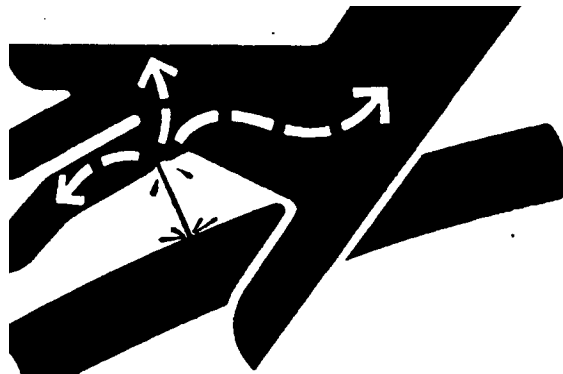
TX,90,DH2560 -19-12MAY93-2/2

BLEEDING BRAKES



CAUTION: Escaping fluid under pressure can penetrate skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard or paper to search for leaks. Do not use your hand.

If ANY fluid is injected into skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.



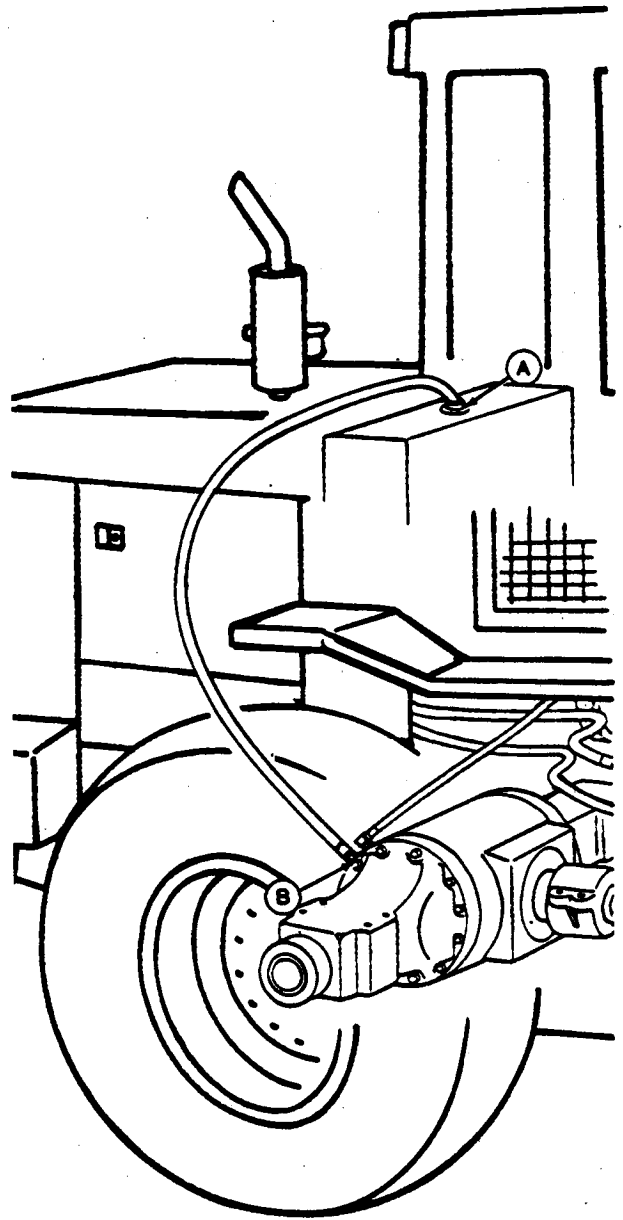
X9811 -UN-23AUG88

NOTE: Two people are required to bleed brake system oil, one to operate brake valve and the other to open and close bleed screws.

1. Install frame locking bar.
2. Start engine and run at slow idle.
3. Push and hold brake pedal down until brake bleeding procedure is complete.

TX,DH,114 -19-06JUN91-1/2

4. Put a clear plastic tube on bleed screw (B) to route flow to hydraulic reservoir filler tube (A) or to a container.
5. Open one bleed screw on differential and axle assembly until hydraulic oil starts to flow. Close bleed screw when oil is free of air.
6. Repeat steps 2—4 for each bleed screw (two bleed screws on each differential).
7. Release brake pedal and stop engine.
8. Check hydraulic oil level. (See Maintenance—Every 10 Hours or Daily chapter.)



T6522BR -UN-20OCT88

TX,DH,114 -19-06JUN91-2/2

CHECKING SECONDARY STEERING SYSTEM—IF EQUIPPED

1. Park machine on a level surface.
2. Shut off engine. Release brakes.
3. Momentarily turn key switch to START but DO NOT start the engine. Release key to ON.
4. The secondary steering motor must be heard running. Secondary steering indicator must light and alarm must sound.
5. Turn steering wheel; Machine should turn partway. Machine will not turn fully when machine is stopped.
6. Start engine. Secondary steering motor, secondary steering indicator and alarm must be off within 3 seconds.

TX,DH,115 -19-06JUN91-1/1

CLUTCH CUT-OFF ADJUSTMENT

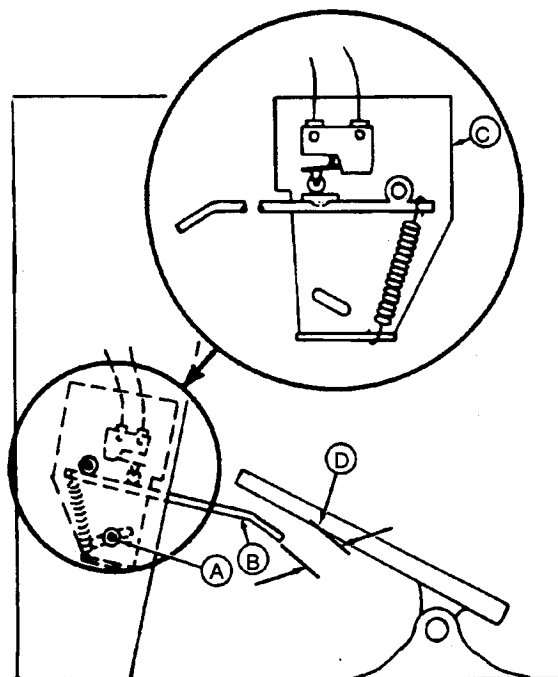
The clutch cut-off switch assembly is easily adjustable to suit operators preference. Adjusting it can increase or decrease the braking action prior to disconnecting the transmission.

TX,90,DH2541 -19-02OCT92-1/2

1. Loosen nut (A).
2. Rotate switch assembly (C) to desired gap (D) between lever (B) and bottom of pedal.

NOTE: Increasing gap (D) increases the amount of braking applied prior to disengaging the transmission.

3. Tighten nut (A).
4. Operate machine with clutch cut-off ON to check if adjustment is to operator's preference for his work application. Adjust as required.



T7817AL (CV)

A—Nut
B—Lever
C—Switch Assembly
D—Gap

T7817AL -UN-08SEP92

TX,90,DH2541 -19-02OCT92-2/2

DO NOT SERVICE CONTROL VALVES, CYLINDERS, PUMPS OR MOTORS

Special tools and information are needed to service control valves, cylinders, pumps, or motors.

If these parts need service, see your authorized dealer.

TX,90,DH2537 -19-03SEP92-1/1

HARDWARE TORQUE SPECIFICATIONS

Check cap screws and nuts to be sure they are tight. If hardware is loose, tighten to torque shown on the following charts unless a special torque is specified.

T82,SKMA,AT -19-01AUG94-1/1

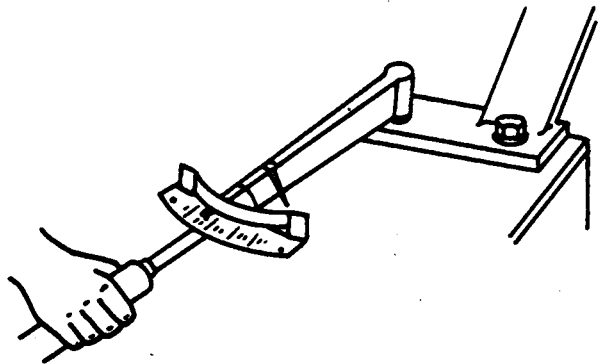
KEEP ROPS INSTALLED PROPERLY



CAUTION: Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered. A damaged ROPS should be replaced, not reused.





















When installation of equipment on a machine necessitates loosening or removing ROPS, mounting bolts must be tightened to $620 \pm 120 \text{ N}\cdot\text{m}$ ($457 \pm 88 \text{ lb}\cdot\text{ft}$).



TS176 -UN-23AUG88

04T,90,MM8 -19-25JUN91-1/1

METRIC BOLT AND CAP SCREW TORQUE VALUES

Property Class and Head Markings	4.8		8.8		9.8		10.9		12.9	
										
Property Class and Head Markings	5		10		10		10		12	
										

TS1163 -19-04MAR91

Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a	
	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you

properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

^a"Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

DX,TORQ2 -19-20JUL94-2/2

ADDITIONAL METRIC CAP SCREW TORQUE VALUES



CAUTION: Use only metric tools on metric hardware. Other tools may not fit properly. They may slip and cause injury.

Check tightness of cap screws periodically. Torque values listed are for general use only. Do not use these values if a different torque value or tightening procedure is listed for a specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

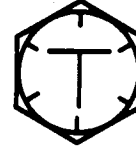
Make sure fastener threads are clean and you properly start thread engagement. This will prevent them from failing when tightening.

Tighten cap screws having lock nuts to approximately 50 percent of amount shown in chart.

METRIC CAP SCREW TORQUE VALUES						
Nominal	T-Bolt		H-Bolt		M-Bolt	
Dia	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
8	29	21	20	15	10	7
10	63	46	45	33	20	15
12	108	80	88	65	34	25
14	176	130	137	101	54	40
16	265	195	206	152	78	58
18	392	289	294	217	118	87
20	539	398	392	289	167	125
22	735	542	539	398	216	159
24	931	687	686	506	274	202
27	1372	1012	1029	759	392	289
30	1911	1410	1421	1049	539	398
33	2548	1890	1911	1410	735	542
36	3136	2314	2401	1772	931	687

*Torque tolerance is $\pm 10\%$.

T6873AA



T-Bolt

T6873AA -UN-18OCT88

T6873AB



H-Bolt

T6873AB -UN-18OCT88









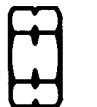


T6873AC



M-Bolt

T6873AC -UN-18OCT88

UNIFIED INCH BOLT AND CAP SCREW TORQUE VALUES

SAE Grade and Head Markings	1 or 2 ^b			5	5.1	5.2	8	8.2
	NO MARK							
SAE Grade and Nut Markings	2			5			8	
	NO MARK							

Size	Grade 1				Grade 2 ^b				Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
	Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a		Lubricated ^a		Dry ^a	
	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	36	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	67	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	240	175	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	400	300	510	375	400	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

^a"Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

^bGrade 2 applies for hex cap screws (not hex bolts) up to 152 mm (6 in.) long. Grade 1 applies for hex cap screws over 152 mm (6 in.) long and for all other types of bolts and screws of any length.

DX,TORQ1 -19-20JUL94-2/2

CHECK OIL LINES AND FITTINGS



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

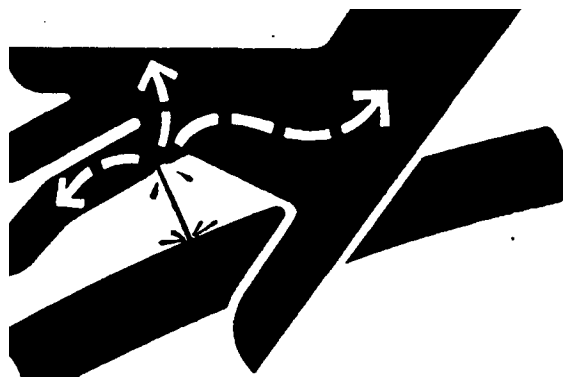
If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

Check all oil lines, hoses, and fittings regularly for leaks or damage. Make sure all clamps are in position and tight. Make sure hoses are not twisted or touching moving machine parts. If abrasion or wear occurs, replace immediately.

Tubing with dents may cause the oil to overheat. If you find tubing with dents, install new tubing immediately.

IMPORTANT: Tighten fittings as specified in torque chart.

When you tighten connections, use two wrenches to prevent bending or breaking tubing and fittings.



X9811 -UN-23AUG88

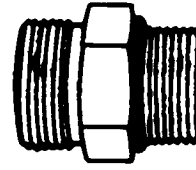


T85401 -UN-24JAN89

SERVICE RECOMMENDATIONS FOR O-RING BOSS FITTINGS

STRAIGHT FITTING

1. Inspect O-ring boss seat for dirt or defects.
2. Lubricate O-ring with petroleum jelly. Place electrical tape over threads to protect O-ring. Slide O-ring over tape and into O-ring groove of fitting. Remove tape.
3. Tighten fitting to torque value shown on chart.

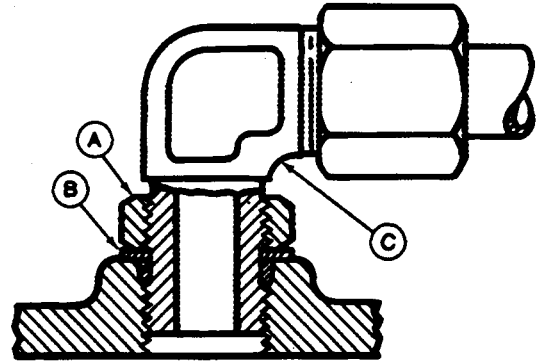


T6243AE -JUN-18OCT88

TX,90,DY323 -19- 2MAY96-1/2

ANGLE FITTING

1. Back-off lock nut (A) and back-up washer (B) completely to head-end (C) of fitting.
2. Turn fitting into threaded boss until back-up washer contacts face of boss.
3. Turn fitting head-end counterclockwise to proper index (maximum of one turn).
4. Hold fitting head-end with a wrench and tighten locknut and back-up washer to proper torque value.



T6520AB -JUN-18OCT88

NOTE: Do not allow hoses to twist when tightening fittings.

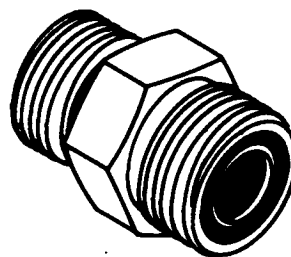
TORQUE VALUE			
Thread Size		N•m	lb-ft
3/8-24	UNF	8	6
7/16-20	UNF	12	9
1/2-20	UNF	16	12
9/16-18	UNF	24	18
3/4-16	UNF	46	34
7/8-14	UNF	62	46
1-1/16-12	UN	102	75
1-3/16-12	UN	122	90
1-5/16-12	UN	142	105
1-5/8-12	UN	190	140
1-7/8-12	UN	217	160

NOTE: Torque tolerance is $\pm 10\%$.

TX,90,DY323 -19- 2MAY96-2/2

SERVICE RECOMMENDATIONS FOR FLAT FACE O-RING SEAL FITTINGS

1. Inspect the fitting sealing surfaces. They must be free of dirt or defects.
2. Inspect the O-ring. It must be free of damage or defects.
3. Lubricate O-rings and install into groove using petroleum jelly to hold in place.
4. Push O-ring into the groove with plenty of petroleum jelly so O-ring is not displaced during assembly.
5. Index angle fittings and tighten by hand pressing joint together to insure O-ring remains in place.
6. Tighten fitting or nut to torque value shown on the chart per dash size stamped on the fitting. Do not allow hoses to twist when tightening fittings.

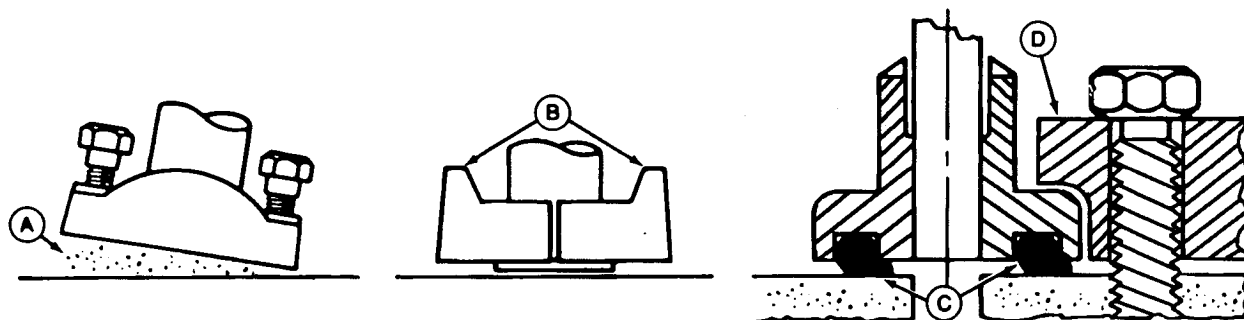


T6243AD -UN-18OCT88

FLAT FACE O-RING SEAL FITTING TORQUE							
Nominal Tube O.D.		Dash Size	Thread Size in.	Swivel Nut		Bulkhead Nut	
mm	in.			N•m	lb-ft	N•m	lb-ft
6.35	0.250	-4	9/16-18	16	12	5.0	3.5
9.52	0.375	-6	11/16-16	24	18	9.0	6.5
12.70	0.500	-8	13/16-16	50	37	17.0	12.5
15.88	0.625	-10	1-14	69	51	17.0	12.5
19.05	0.750	-12	1 3/16-12	102	75	17.0	12.5
22.22	0.875	-14	1 3/16-12	102	75	17.0	12.5
25.40	1.000	-16	1 7/16-12	142	105	17.0	12.5
31.75	1.250	-20	1 11/16-12	190	140	17.0	12.5
38.10	1.500	-24	2-12	217	160	17.0	12.5

NOTE: Torque tolerance is +15 -20%.

SERVICE RECOMMENDATIONS FOR METRIC SERIES FOUR BOLT FLANGE FITTING



A—Sealing Surface

B—Split Flange

C—Pinched O-Ring

D—Single Piece Flange

1. Clean sealing surfaces (A). Inspect. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If defects cannot be polished out, replace component.
2. Install the correct O-ring (and backup washer if required) into groove using petroleum jelly to hold it in place.
3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to the port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring (C).
4. Single piece flange (D): Place hydraulic line in center of flange and install four cap screws. Flange must be centrally located on port. Hand tighten cap screws to hold flange in place. Do not pinch O-ring.
5. After components are properly positioned and cap screws are hand tightened, tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten two remaining cap screws. Tighten all cap screws as specified in the chart below.

DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

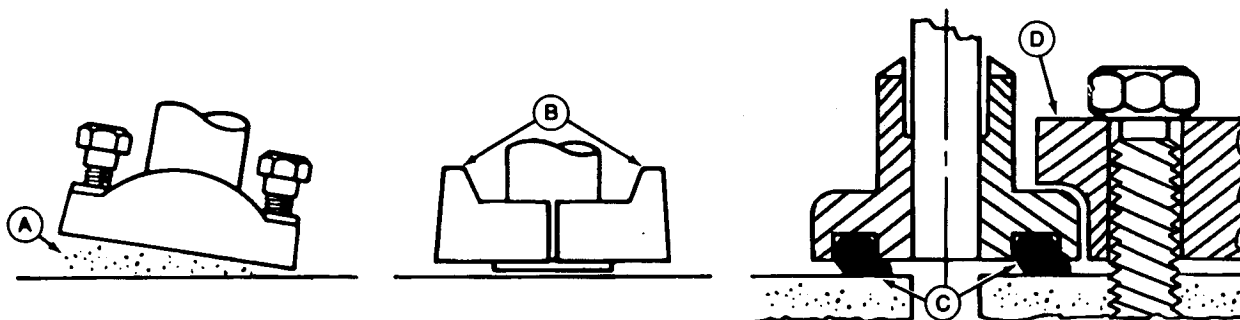
TORQUE CHART*

Thread**	N•m	lb-ft
M6	12	9
M8	30	22
M10	57	42
M12	95	70
M14	157	116
M16	217	160
M18	334	246
M20	421	318

**Tolerance $\pm 10\%$. The torques given are enough for the given size connection with the recommended working pressure. Increasing cap screw torque beyond these amounts will result in flange and cap screw bending and connection failures.*

***Metric standard thread.*

SERVICE RECOMMENDATIONS FOR INCH SERIES FOUR BOLT FLANGE FITTINGS



A—Sealing Surface

B—Split Flange

C—Pinched O-Ring

D—Single Piece Flange

1. Clean sealing surfaces (A). Inspect. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If defects cannot be polished out, replace component.
2. Install O-ring (and backup washer if required) into groove using petroleum jelly to hold it in place.
3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring (C).
4. Single piece flange (D): Place hydraulic line in center of flange and install cap screws. Flange

must be centrally located on port. Hand tighten cap screws to hold flange in place. Do not pinch O-ring.

5. Tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten two remaining cap screws. Tighten all cap screws as specified in the chart below.

DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

04T,90,K174 -19-01AUG94-1/2

T6890BB -UN-01MAR90

TORQUE CHART*

Nominal Flange Size	Cap Screw Size		N•m		lb-ft	
			Min	Max	Min	Max
1/2	5/16-18	UNC	20	31	15	23
3/4	3/8-16	UNC	28	54	21	40
1	3/8-16	UNC	37	54	27	40
1-1/4	7/16-14	UNC	47	85	35	63
1-1/2	1/2-13	UNC	62	131	46	97
2	1/2-13	UNC	73	131	54	97
2-1/2	1/2-13	UNC	107	131	79	97
3	5/8-11	UNC	158	264	117	195
3-1/2	5/8-11	UNC	158	264	117	195
4	5/8-11	UNC	158	264	117	195
5	5/8-11	UNC	158	264	117	195

**Tolerance $\pm 10\%$. The torques given are enough for the given size connection with the recommended working pressure. Torques can be increased to the maximum shown for each cap screw size if desired.*

Increasing cap screw torque beyond this maximum will result in flange and cap screw bending and connection failures.

04T,90,K174 -19-01AUG94-2/2

Operational Checkout

OPERATIONAL CHECKOUT

Use this procedure to check all systems and functions on the machine. It is designed so you can make a quick check of the operation of the machine while doing a walk around inspection and performing specific checks from the operator's seat.

Should you experience a problem with your machine, you will find helpful diagnostic information in this checkout that will pinpoint the cause. This information may allow you to perform a simple adjustment which will reduce the downtime of your machine. Use the table of contents to help find adjustment procedures.

The information you provide after completing the operational checkout will allow you or your authorized dealer to pinpoint the specific test or repair work needed to restore the machine to design specifications.

A location will be required which is level and has adequate space to complete the checks. No tools or equipment are needed to perform the checkout.

Complete the necessary visual checks (oil levels, oil condition, external leaks, loose hardware, linkage, wiring, etc.) prior to doing the checkout. The machine must be at operating temperature for many of the checks.

Start at the top of the left column and read completely down column before performing check, follow this sequence from left to right. In the far right column, if no problem is found (OK), you will be instructed to go to next check. If a problem is indicated (NOT OK), you will be referred to either a section in this manual or to your authorized dealer.

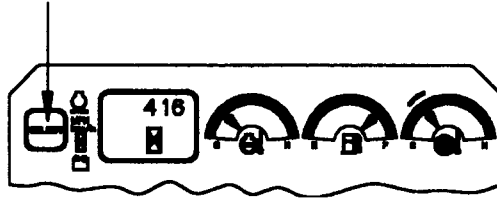
TX,95,DH2538 -19-03SEP92-1/1

1 MONITOR INDICATOR AND GAUGE CHECKS—ENGINE OFF

-- -1/1

HOURLMETER AND GAUGE CHECK

Key switch OFF.



T7773BC -UN-05AUG92

Press SELECT button.

LOOK: Hourmeter reading must be displayed. The Engine Temperature, Fuel, and Transmission Temperature gauges must have single arrow pointing to correct reading. Backlighting of gauges must be ON.

NOTE: Hourmeter only displays in hours, not in tenths of hour.

OK: Go to next check

NOT OK: Temperature gauge is solid, 9 arrows showing, circuit is open or shorted. Go to your authorized dealer.

NOT OK: One arrow blinking on fuel gauge. Add fuel. If still blinking, circuit is open or shorted. Go to your authorized dealer.

-- -1/1

BATTERY CHECK

Key switch OFF.



T7825BC -UN-21AUG92

Press SELECT button and hold until battery volts are displayed.

LOOK: Battery volts must read a minimum of 12.3 volts.

OK: Go to next check.

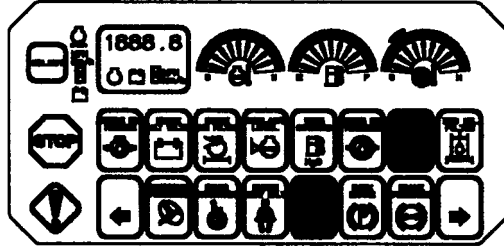
NOT OK: See Monitor Display and Alternator Output Check in this group.

IF OK: Check and recharge batteries.

-- -1/1

Operational Checkout

MONITOR INDICATOR CIRCUIT AND KEY SWITCH CHECK



T7773BA -UN-05AUG92

Apply brake pedal 10 times.

Turn key switch to accessory position.

LISTEN: Accessory relay must click.

LOOK & LISTEN: All monitor indicators and functions, including the alarm, must come ON after 1 second and remain ON for 5 seconds.

After 5 seconds:

LOOK: Hourmeter and gauges must display a reading and backlighting must be ON.

LOOK & LISTEN: The following indicators must be ON: STOP, Engine Oil Pressure, Engine Alternator Volts, Transmission Pressure, Steering Pressure (If equipped) and Brake Pressure.

Turn key switch to ON.

LISTEN: Accessory relay must click.

All monitor indicators and functions must come ON after 1 second and remain ON for 5 seconds.

After 5 seconds:

LOOK: Hourmeter and gauges must display a reading and backlighting must be ON.

LOOK & LISTEN: The following indicators must be ON: STOP, Engine Oil Pressure, Engine Alternator Volts, Transmission Pressure, Steering Pressure (If equipped), Park Brake and Brake Pressure.

OK: Go to next check

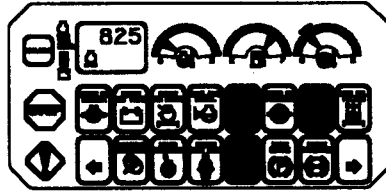
NOT OK: Check monitor ACC fuse.

NOT OK: If brake pressure stays off after 10 pumps, see Brake Accumulator Precharge check.

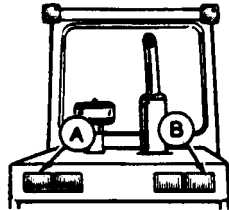
IF OK: Go to your authorized dealer.

-- 1/1

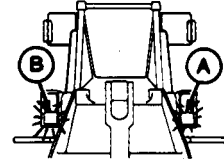
MONITOR TURN SIGNALS AND HAZARD WARNING INDICATOR CHECKS



T7773BB -UN-21AUG92



T6633AB2 -UN-18OCT88



T6564OL -UN-19OCT88

Move turn signal switch left, then right. Move hazard warning switch to ON.

LOOK: Left, right, and then both turn signal indicators must be flashing. Front and rear lights (A and B) must flash as indicated by monitor lights.

OK: Go to next check

NOT OK: Check fuse.

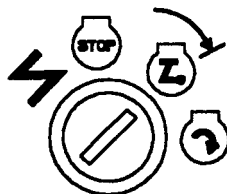
IF OK: Check bulbs and wiring. Go to your authorized dealer.

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② TRANSMISSION CONTROLS, AXLE AND ENGINE LINKAGES, NEUTRAL START SWITCH, AND REVERSE WARNING ALARM SWITCH CHECKS

--1/1

NEUTRAL START AND REVERSE WARNING ALARM CIRCUIT CHECKS



T7773B11 -UN-05AUG92

Turn key switch to ON position and wait 5 seconds.

With transmission control lever in reverse "R", forward "F", and neutral "N" positions, turn key switch to START .

LISTEN: Starting motor must run while lever is in neutral "N" position only.

LISTEN: Reverse warning alarm must sound with lever in reverse "R".

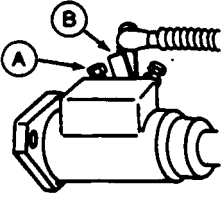
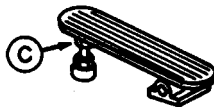
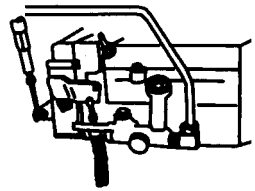
OK: Go to next check

NOT OK: Check fuse.

IF OK: Go to your authorized dealer.

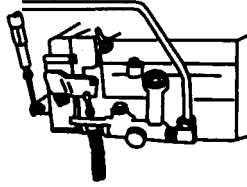
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Operational Checkout

<p>ENGINE SPEED CONTROL LINKAGE CHECK—544G, 624G</p> <p>Engine OFF.</p> <p>Right engine service door open.</p>	<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>T6564NL -UN-19OCT88 T6564NM -UN-19OCT88</p> <p>Check injection pump lever with accelerator pedal up.</p> <p><i>LOOK: Slow idle stop screw (A) must contact injection pump housing.</i></p> <p>Have someone fully depress accelerator pedal (or use a weight). Check injection pump lever position.</p> <p><i>LOOK: Long lever must slightly over-travel short lever (B).</i></p> <p><i>FEEL: Accelerator pedal must contact stop bolt (C).</i></p>	<p>OK: Go to next check</p> <p>NOT OK: Adjust linkage. See Adjust Engine Speed Control Linkage in Maintenance—Every 1000 Hours chapter.</p> <p style="text-align: right;">-- -1/1</p>
<p>ENGINE SPEED CONTROL LINKAGE CHECK—644G</p>	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Release accelerator pedal.</p> <p>Push up on injection pump lever.</p> <p><i>LOOK: Lever MUST NOT move up.</i></p> </div> </div> <p>T8030AN -UN-21JUN93</p>	<p>OK: Continue.</p> <p style="text-align: right;">-- -1/1</p>
<p>ENGINE SPEED CONTROL LINKAGE CHECK—644G (CONTINUED)</p>	<p>Have someone fully depress accelerator pedal (or use a weight).</p> <p><i>LOOK: Injection pump lever must be against fast idle stop.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Adjust speed control linkage. See Adjust Engine Speed Control Linkage in Maintenance—Every 1000 Hours chapter.</p> <p style="text-align: right;">-- -1/1</p>

Operational Checkout

FUEL SHUT-OFF SOLENOID LINKAGE CHECK—644G



T8030AN -UN-21JUN93

Open right engine side shield and inspect linkage.

LOOK: Fuel shut-off cam must be tight against the lower stop.

Start engine and engage park brake.

Open right engine side shield and inspect linkage.

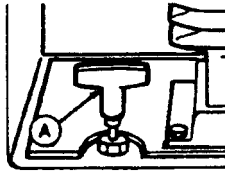
LOOK: Fuel shut-off cam must be tight against the upper stop.

OK: Go to next check

NOT OK: Adjust fuel shut-off solenoid linkage. See Adjusting Fuel Shut-Off Solenoid in Maintenance chapter.

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FRONT AXLE DISCONNECT CHECK— IF EQUIPPED



T7747AN1 -UN-21AUG92

Move front axle disconnect lever (A) up, to disconnect axle.

Start engine.

Lower boom to raise front wheels off ground.

Move transmission control lever to reverse "R".

Back drag with bucket.

Observe front wheels.

LOOK: Front wheels MUST NOT turn.

Push lever down to reconnect axle.

Observe front wheels when back dragging

LOOK: Front wheels must turn.

OK: Go to next check.

NOT OK: Inspect cable linkage to axle, repair as required.

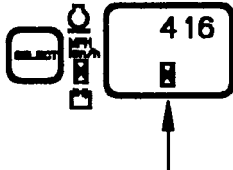


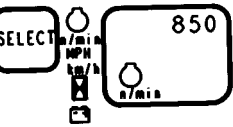
IF OK: Go to your authorized dealer.

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③ MONITOR INDICATOR AND GAUGE CHECKS (ENGINE RUNNING)

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MONITOR DISPLAY AND ALTERNATOR OUTPUT CHECK

 <p>T7825BD -UN-21AUG92</p>	<p>Turn key switch to on and wait 5 seconds.</p> <p><i>LOOK: Hourmeter reading must appear.</i></p>
 <p>T7825BC -UN-21AUG92</p>	<p>Press SELECT button once.</p> <p><i>LOOK: Battery volts reading must be 12.3—13.8.</i></p>
 <p>T7825BF1 -UN-24AUG92</p>	<p>Press SELECT button once.</p> <p><i>LOOK: Engine rpm must read 0.</i></p> <p>Press SELECT button once.</p> <p><i>LOOK: MPH reading must be 0.</i></p>
 <p>T8368BP -UN-02JAN94</p>	<p>Press SELECT button once.</p> <p><i>LOOK: km/H reading must be 0.</i></p> <p>Start engine and run at slow idle. Observe monitor display.</p> <p><i>LOOK: The following engine rpm readings must be displayed. 544G/624G: 825—875 rpm 644G: 775—825 rpm (SN -544523) 875—925 rpm (SN 544524-)</i></p>

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	<p>  </p> <p>T7825BB –UN–21AUG92</p> <p>  </p> <p>T7825BD –UN–21AUG92</p> <p>  </p> <p>T7825BE –UN–21AUG92</p>	<p> Increase engine speed to fast idle and observe monitor display. </p> <p> LOOK: The following engine rpm readings must be displayed. 544G: 2350—2400 rpm 624G/644G: 2300—2350 rpm </p> <p> Press SELECT button until hourmeter icon is displayed. </p> <p> LOOK: Hourmeter icon must be flashing and hourmeter reading must be displayed. </p> <p> Reduce engine speed to slow idle and press select button until battery voltage is displayed. </p> <p> LOOK: Battery voltage should be higher than in step 5 and should be approximately 13.6—14.5 volts. </p> <p> OK: Go to next check </p> <p> NOT OK: No monitor reading displayed. Check ACC fuse to monitor. </p> <p> IF OK: Go to your authorized dealer. </p> <p> NOT OK: Check speed control linkage. </p> <p> IF OK: See Adjust Engine Speed Control Linkage in Maintenance—Every 1000 Hours chapter. </p> <p> NOT OK: Check alternator circuit output. Go to your authorized dealer. </p>
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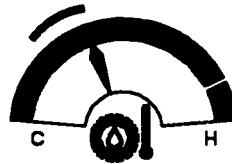
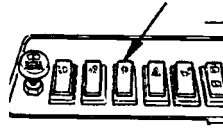
Operational Checkout

<p>MONITOR INDICATOR CIRCUIT BYPASS AND SEAT BELT INDICATOR CHECK</p> <p>Depress service brake pedal 10 times.</p> <p>Lock transmission control lever in neutral "N".</p>	<div> </div> <p>T7773BH1 –UN–05AUG92</p> <div> </div> <p>T7747AH1 –UN–24AUG92</p> <div> </div> <p>T7773BB –UN–21AUG92</p> <p>In a single motion, turn key and start engine.</p> <p><i>LOOK & LISTEN: Engine should start and bypass the bulb check mode.</i></p> <p><i>LOOK: Seat belt indicator must go out after 5 seconds after engine starts.</i></p> <p><i>LOOK: Monitor must display engine rpm and gauges must indicate only one reading.</i></p> <p>Release park brake.</p> <p><i>LOOK: Park brake indicator must go out.</i></p> <p><i>NOTE: It is normal for Engine Oil Pressure, Brake Pressure, and Transmission Pressure indicators to stay on 4–6 seconds after engine starts.</i></p>	<p>OK: Go to next check</p> <p>NOT OK: Check for an unhooked wiring connector.</p> <p>IF OK: Go to your authorized dealer.</p> <p style="text-align: right;">-- -1/1</p>
<p>MONITOR PRIMARY AND SECONDARY LEVEL CHECKS</p> <p>Engine running.</p>	<div> </div> <p>T7747AG1 –UN–24AUG92</p> <p>Engage park brake</p> <p><i>LOOK: Park brake indicator must come ON.</i></p> <p>Move transmission control lever to forward "F".</p> <p><i>LOOK: Park brake indicator must remain ON and STOP indicator must come ON and flash at 1 second intervals.</i></p> <p>Engage park brake.</p>	<p>OK: Go to next check</p> <p>NOT OK: Go to your authorized dealer.</p> <p style="text-align: right;">-- -1/1</p>

Operational Checkout

TRANSMISSION TEMPERATURE GAUGE CHECK

Engine running.



T7773BO2 -UN-05AUG92

T7773BF -UN-05AUG92

Release park brake.

Move clutch cut-off switch to the ON position.

Apply service brakes.

Move transmission control lever to 3rd gear forward.

Increase engine speed to fast idle for 30 seconds.

LOOK: Transmission temperature indicator arrow must move to the right.

OK: Go to next check.

NOT OK: If gauge shows solid arrows, check connector at sender.

IF OK: Go to your authorized dealer.

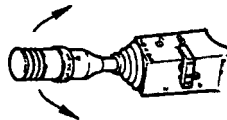
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④ BRAKE SYSTEM, CLUTCH CUT-OFF, AND DIFFERENTIAL LOCK CHECKS

--1/1

PARK BRAKE TRANSMISSION LOCKOUT CHECK

Engine running.



T7773BM -UN-05AUG92

T7773BN -UN-05AUG92

Move park brake switch to ON.

Move transmission control lever to 1st gear forward.

Slowly increase engine speed to fast idle.

LOOK: Machine MUST NOT move.

OK: Go to next check

NOT OK: Do not operate machine without interlock working. Go to your authorized dealer.

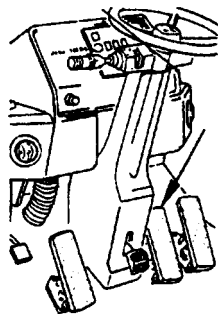
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Operational Checkout

SERVICE BRAKE PUMP FLOW CHECK

NOTE: Hydraulic oil must be at operating temperature for this check.

Engine OFF.



T7773BQ3 -UN-21AUG92

Stop engine.

Operate brake pedal approximately 15 times.

Start engine and run at slow idle.

Record number of seconds required for low brake pressure indicator light to go out.

LOOK: Indicator light must go out in less than 10 seconds from time engine starts.

NOTE: Indicator light will not come on for approximately 1 second after starting engine.



T7747AF1 -UN-24AUG92

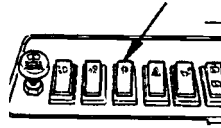
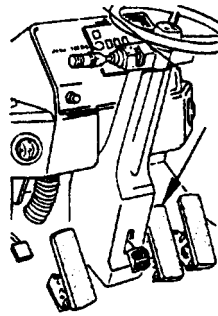
OK: Go to next check

NOT OK: Check for brake circuit leakage. Go to your authorized dealer.

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SERVICE BRAKE CHECK

Engine running.



T7773BQ2 -UN-05AUG92

T7773BQ3 -UN-21AUG92

Move clutch disconnect switch to OFF.

Apply service brakes, release park brake, and move transmission control lever to 2nd gear forward.

Increase engine speed to fast idle.

LOOK: Machine MUST NOT move or move at a very slow speed.

Repeat check three times to ensure accurate results.

OK: Go to next check

NOT OK: Go to your authorized dealer.

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BRAKE ACCUMULATOR PRECHARGE CHECK

NOTE: The axles and hydraulic oil must be at operating temperature for this check.

Start engine and run engine for 30 seconds.

Stop engine. Turn key switch to ON and wait 5 seconds.

NOTE: STOP indicator light will be on due to no engine oil pressure.

Count the number of times the brake pedal can be fully depressed before the low brake pressure warning light comes ON.



T7747AF1 -UN-24AUG92

LOOK: Warning light must come ON in 1—5 applications.

Start engine and operate at slow idle.

Observe monitor while applying brake pedal with maximum force.

LOOK & LISTEN: Brake pressure indicator MUST NOT come ON.

OK: Go to next check

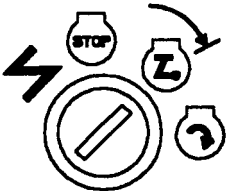

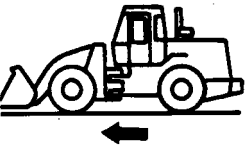
NOT OK: Make sure brake pedal is not binding and keeping brakes partially engaged.

IF OK: Bleed brakes. See Bleeding Brakes in Maintenance chapter.

NOT OK: If light comes ON with engine running, accumulator not charged. Go to your authorized dealer.

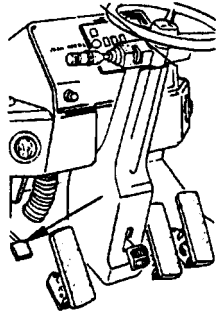
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Operational Checkout

<p>BRAKE SYSTEM LEAKAGE CHECK</p>	<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p>T7773BI1 -UN-05AUG92 T7747AF1 -UN-24AUG92</p> <p>Start engine and wait 30 seconds.</p> <p>Stop engine.</p> <p>Wait 2 minutes.</p> <p>Turn key switch to ON and wait 5 seconds.</p> <p><i>LOOK: Brake low pressure warning light MUST NOT come ON within 2 minutes after stopping engine.</i></p>	<p>OK: Go to next check</p> <p>NOT OK: Go to your authorized dealer.</p>
<p>SERVICE BRAKE PEDAL CHECK</p> <p>Engine OFF.</p>	<p>Slowly depress each brake pedal one at a time.</p> <p>Listen for a hissing noise that indicates oil is flowing to brake pistons.</p> <p><i>LISTEN & FEEL: A hissing noise must be heard when pedal is depressed approximately 6 mm (1/4 in.)</i></p>	<p>OK: Go to next check</p> <p>NOT OK: Inspect for debris under brake pedal. Inspect clutch cut-off linkage.</p>
<p>SERVICE AND PARK BRAKE SYSTEM DRAG CHECKS</p> <p>Engine running.</p>	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Position machine on a gradual slope.</p> <p>Lower bucket approximately 50 mm (2 in.) from ground.</p> <p>Release park and service brakes.</p> <p><i>LOOK: Machine must move or coast.</i></p> <p><i>NOTE: If machine does not move, check brake pedals to be sure they fully release when feet are removed from pedals.</i></p> <p>Drive machine at high speed for about 5 minutes. Brake drag is indicated if brake areas in differential case are hot.</p> <p><i>NOTE: Observe park brake. If disk is hot, park brake drag is indicated.</i></p> </div> </div> <p>T6522CH -UN-19OCT88</p>	<p>OK: Go to next check</p> <p>NOT OK: Adjust park brake. See Adjusting Park Brake in Maintenance chapter.</p>

Operational Checkout

DIFFERENTIAL LOCK CHECK



T7773BQ1 -UN-21AUG92

Park machine on a hard surface.

Release brakes.

Engage differential lock.

Steer machine back and forth.

LOOK: Front wheels **MUST NOT** turn in opposite direction.

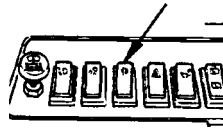
NOTE: It is normal to get a "clunk" sound when you release pedal.

OK: Go to next check

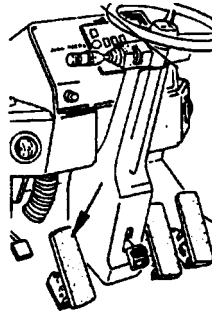
NOT OK: See Differential Axle in Troubleshooting chapter.

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CLUTCH CUT-OFF CHECK



T7773BO2 -UN-05AUG92



T7773BQ2 -UN-21AUG92

Move clutch cut-off switch to ON position.

Release park brake.

Run engine at 1/2 speed in 1st gear forward.

Firmly depress left brake pedal.

FEEL: Transmission must disengage when left brake pedal is depressed.

NOTE: Clutch cut-off switch on left brake pedal can be adjusted to operator preference to match your loading needs.

OK: Go to next check

NOT OK: Adjust clutch cut-off switch. See Adjusting Clutch Cut-Off Switch in Maintenance chapter.

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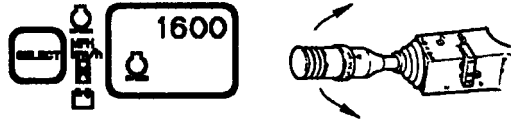
⑤ DRIVING CHECKS

NOTE: Transmission oil must be at operating temperature for these checks.

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TRANSMISSION NOISE CHECK

Engine running.



T7825BH -UN-21AUG92

T7773BN -UN-05AUG92

Run engine at approximately 1600 rpm.

Drive machine with transmission in each forward and reverse gear.

LISTEN: Transmission **MUST NOT** make excessive noise in any range.

Engine rpm **MUST NOT** "lug down" as transmission is shifted between gears.

OK: Go to next check

NOT OK: Go to Transmission Makes Excessive Noise in Troubleshooting chapter.

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Operational Checkout

AUTOMATIC SHIFT AND SPEEDOMETER CHECK

Engine running.



T7825BG -UN-21AUG92

Press SELECT button on monitor until MPH or Km/H is displayed.

Release park brake and move transmission control lever to 4th gear forward.

Drive machine on level ground and slowly accelerate to fast idle speed. Note speed when shifts are made until 4th gear. Reduce engine rpm to idle and note speed when transmission makes each downshift.

LOOK: Transmission should shift at following speeds:

Shift	544G		624G		644G	
	MPH	Km/H	MPH	Km/H	MPH	Km/H
2nd-3rd	6	9	6	9	6	9
3rd-4th	13	21	12	18	11	17
4th-3rd	12	18	11	17	10	16
3rd-2nd	5	7	5	7	5	7

NOTE: In 4th gear automatic the transmission starts out in 2nd gear.

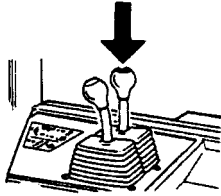
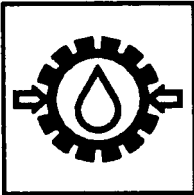
OK: Go to next check.

NOT OK: Monitor is programmed for wrong machine model. Go to your authorized dealer.

NOT OK: Transmission controller does not match machine model. Go to your authorized dealer.

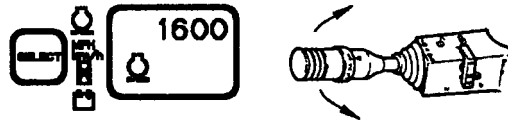
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Operational Checkout

<p>TRANSMISSION QUICKSHIFT CHECK</p> <p>Engine running.</p>	 <p>T7825BL1 -UN-31AUG92</p> <p>Release park brake and move transmission control lever to 2nd gear forward.</p> <p>Drive machine at approximately 1600 rpm and press boom control lever switch once.</p> <p><i>LOOK & FEEL: Transmission must shift to 1st gear.</i></p> <p>Press boom control lever switch once.</p> <p><i>LOOK & FEEL: Transmission must shift back to 2nd gear.</i></p> <p>Shift to (4th) gear and press boom control lever switch once.</p> <p><i>LOOK & FEEL: Transmission must not shift down.</i></p> <p><i>NOTE: If boom lever switch is pressed twice, transmission will shift down, then immediately back to 2nd. Transmission will also quickshift from 3rd gear, but quickshift will not work in any gear when in 4th gear "automatic" mode.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Check connector at base of control valve.</p> <p>IF OK: Go to your authorized dealer.</p>
<p>TRANSMISSION PRESSURE, PUMP FLOW, AND LEAKAGE CHECK</p> <p>Engine running.</p>	<p>Run engine at slow idle.</p> <p>Release park brake.</p> <p>Shift transmission control lever to reverse, then forward, and then to 1st, 2nd, 3rd and 4th gears.</p> <p>Wait 5 seconds after each shift and observe transmission pressure indicator light.</p>  <p>T7747AD1 -UN-24AUG92</p> <p><i>LOOK: Indicator light MUST NOT come ON.</i></p> <p><i>NOTE: If light comes ON in one gear only, leakage is indicated on that gear.</i></p> <p>If light comes ON in all gears, low pump flow or pressure is indicated.</p>	<p>OK: Go to next check</p> <p>NOT OK: Go to your authorized dealer.</p>

TRANSMISSION SHIFT MODULATION CHECK

Engine running.



T7825BH -UN-21AUG92

T7773BN -UN-05AUG92

Run engine at approximately 1600 rpm.

Move transmission control lever to 1st gear forward. Shift several times from forward to reverse and reverse to forward. Repeat check in 2nd gear.

LOOK: Machine must slow down and change direction without excessive delay.

OK: Go to next check

NOT OK: See Machine Shifts Too Fast in Troubleshooting chapter.

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6 HYDRAULIC SYSTEM CHECKS

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HYDRAULIC SYSTEM WARM-UP PROCEDURE

Engine running.

Run engine at fast idle.

Hold a hydraulic function over relief to heat oil.

Periodically cycle all hydraulic functions to distribute warm oil.

Repeat procedure until oil is at operating temperature.

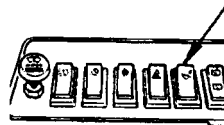
FEEL: Hydraulic reservoir must be uncomfortable to hold your hand against (approximately 50° C [120° F]).

OK: Go to next check.

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BOOM DOWN SOLENOID VALVE CHECK

Engine running.



T7773BO1 -UN-05AUG92

Raise boom to full height. Roll bucket back.

Stop engine.

Hold boom down switch down.

Move control lever to bucket dump position.

Move control lever to boom lower position.

LOOK: Bucket must dump and boom must lower.

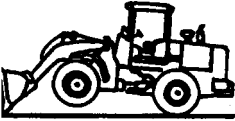
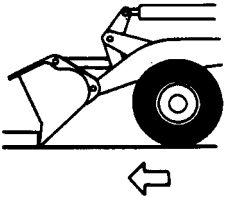
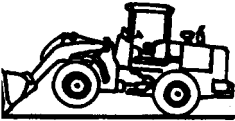
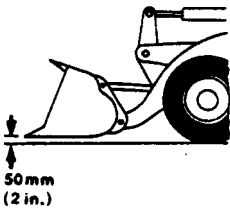
OK: Go to next check

NOT OK: Check fuse.

IF OK: Go to your authorized dealer.

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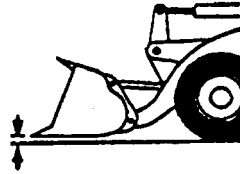
Operational Checkout

<p>CONTROL VALVE LIFT CHECK</p> <p>Run engine at slow idle.</p>	 <p>T6601AA -UN-19OCT88</p> <p>With bucket partially dumped, lower boom to raise front of machine.</p> <p>Slowly move boom control lever to boom lower position.</p> <p>Slowly move bucket control lever to bucket dump position.</p> <p><i>LOOK: Boom MUST NOT raise before moving down. Bucket MUST NOT rollback before dumping.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Repair lift checks in loader control valve. Go to your authorized dealer.</p> <p style="text-align: right;">-- -1/1</p>
<p>BUCKET ROLLBACK CIRCUIT RELIEF VALVE CHECK</p>	 <p>T6564OD -UN-19OCT88</p> <p>Position bucket at a 45° angle against an immovable object.</p> <p>Move transmission control lever to 3rd gear forward.</p> <p><i>LOOK: Bucket angle MUST NOT change.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Check loader system and circuit relief valve pressures. Go to your authorized dealer.</p> <p style="text-align: right;">-- -1/1</p>
<p>BUCKET DUMP CIRCUIT RELIEF VALVE PRESSURE CHECK</p>	 <p>T6601AA -UN-19OCT88</p> <p>Raise front of machine with bucket at 45° angle.</p> <p>Backdrag with bucket while observing bucket angle.</p> <p><i>LOOK: Bucket MUST NOT rollback.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Check loader system and circuit relief valve pressure. Go to your authorized dealer.</p> <p style="text-align: right;">-- -1/1</p>
<p>BOOM AND BUCKET CYLINDER DRIFT</p>	 <p>T6564NZ -UN-19OCT88</p> <p>Raise bucket about 50 mm (2 in.) off ground with bucket level.</p> <p>Stop engine. Wait 1 minute.</p> <p><i>LOOK: Bucket MUST NOT touch ground.</i></p> <p><i>NOTE: Use good judgement to determine if the amount of drift is objectionable for your loader application.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Go to your authorized dealer.</p> <p style="text-align: right;">-- -1/1</p>

Operational Checkout

BOOM DOWN CHECK VALVE LEAKAGE CHECK

Heat hydraulic oil to operating temperature. (See Hydraulic System Warm-up Procedure in this group.)



T7010AO -UN-15MAR89

Position bucket flat on ground.

Run engine at slow idle for 2 minutes.

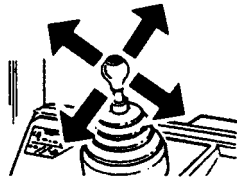
LOOK: Bucket MUST NOT drift up.

OK: Go to next check

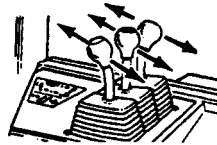
NOT OK: Replace boom lower check valve. Go to your authorized dealer.

--1/1

PILOT CONTROLLER CHECK



T7827AI2 -UN-24AUG92



T7827AD -UN-24AUG92

Stop engine. Turn key switch to OFF position.

Move control lever to all positions and then release.

LOOK: Lever must return to neutral when released from all positions.

OK: Go to next check.

NOT OK: Repair pilot controllers. Go to your authorized dealer.

--1/1

RETURN-TO-DIG CHECK

Run engine at slow idle.



T7827AI3 -UN-24AUG92

Position bucket fully dumped just above ground level.

Move control lever to return-to-dig detent position and release.

LOOK: Bucket must rollback to the level position and control lever must return to neutral.

NOTE: If bucket is in a rolled back position when key switch is turned ON, control lever must be returned to neutral manually if placed in the return-to-dig detent position. After bucket is dumped once, return-to-dig will work normally.

OK: Go to next check

NOT OK: Check fuse.

IF OK: Adjust switch. See Adjusting Return-To-Dig in Operating the Machine chapter.

--1/1

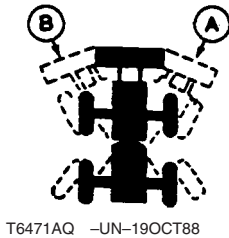
Operational Checkout

<p>BOOM HEIGHT KICKOUT CHECK—IF EQUIPPED</p> <p>Run engine at slow idle.</p>	<div> </div> <p>T7825BL -UN-24AUG92</p> <p>Position bucket flat on ground.</p> <p>Move control lever to boom raise detent position and release.</p> <p><i>LOOK: Boom must raise to the set height and stop. Control lever must return to neutral.</i></p>	<p>OK: Go to next check</p> <p>NOT OK: Check fuse.</p> <p>IF OK: See Adjusting Boom Height Kickout in Operating the Machine chapter.</p> <p style="text-align: right;">--1/1</p>
<p>PIN DISCONNECT CYLINDER CHECK (544G-TC ONLY)</p> <p>Engine running.</p>	<p>Run engine at slow idle.</p> <p>Lower boom to ground.</p> <p>Push and hold down pin disconnect switch.</p> <p><i>LOOK: Pin disconnect cylinder must retract both pins, while switch is depressed.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Hold a screwdriver blade against the end of the solenoid valve and check for magnetism with the switch pushed.</p> <p>If the problem is electrical, check fuse.</p> <p>IF OK: Go to your authorized dealer.</p> <p>If the problem is hydraulic, go to your authorized dealer.</p> <p style="text-align: right;">--1/1</p>
<p>RIDE CONTROL ACCUMULATOR CHECK—IF EQUIPPED</p> <p>CAUTION: The boom will jump upward during this check. Make sure area around bucket is clear.</p>	<div> </div> <p>T7010AO -UN-15MAR89</p> <p>Start engine.</p> <p>Push ride control switch to OFF position.</p> <p>Raise boom to maximum height and hold control lever over relief for 2 seconds.</p> <p>Lower boom and bucket to ground and stop engine.</p> <p>Turn key switch to ON position.</p> <p>Observe loader boom as ride control switch is switched to ON.</p> <p><i>LOOK & FEEL: Boom will jump upward, approximately 200 mm (8.0 in.) as accumulator pressure is released.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Check ride control fuse. IF OK: Ride control accumulator has lost gas charge. Go to your authorized dealer.</p> <p style="text-align: right;">--1/1</p>

7 STEERING SYSTEM CHECKS

--1/1

STEERING VALVE CHECK



Run engine at slow idle.

Turn steering wheel until frames are at maximum right (A) and then left (B) positions.

LOOK: Frames must move smoothly in both directions.

NOTE: It is normal for steering to drift away from steering stops when steering wheel is released.

When steering wheel is stopped, frames must stop.

FEEL: Excessive effort must not be required to turn steering wheel.

OK: Go to next check.

NOT OK: Go to next check.

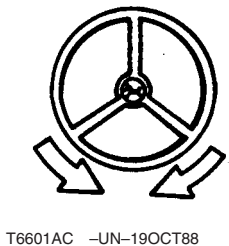
--1/1

STEERING SYSTEM LEAKAGE CHECK

Heat hydraulic oil to operating temperature. (See Hydraulic System Warm-Up Procedure in this group.)

Run engine at fast idle.

Note: Cold oil may give increased RPM's during this check.



Turn steering wheel rapidly until frames are against stops. Hold approximately 22 N (5 lb force) pressure on steering wheel.

Count steering wheel revolutions for 1 minute. Repeat test in opposite direction.

LOOK: Steering wheel must rotate less than 5 rpm.

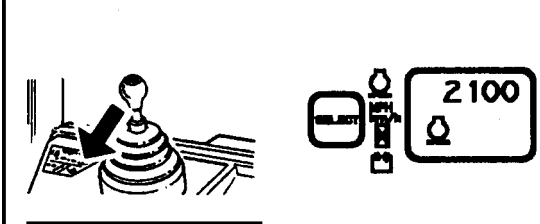
NOTE: Use good judgement; excessive steering wheel rpm does not mean steering will be affected.

OK: Go to next check.

NOT OK: Go to your authorized dealer.

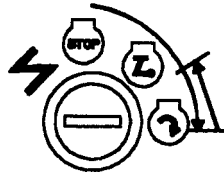
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Operational Checkout

<p>PRIORITY VALVE LOW PRESSURE CHECK</p> <p>Park machine on a hard surface.</p> <p>Run engine at fast idle.</p>	<p>Hold brake pedal down.</p> <p>Steer machine to the right and left as far as possible.</p> <p><i>LOOK: machine must turn at least 1/2 way to the right and left stops.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Adjust priority valve pressure. Go to your authorized dealer.</p> <p>---1/1</p>
<p>PRIORITY VALVE HIGH PRESSURE CHECK</p> <p>Run engine at fast idle.</p>	<div><p>T7827AI3 -UN-24AUG92 T7825BJ -UN-21AUG92</p></div> <p>Steer to steering stop and release wheel.</p> <p>Roll bucket back and hold over relief and observe engine rpm.</p> <p>Turn wheel to steering stop and hold. Observe engine rpm.</p> <p><i>LOOK: Steering stall engine rpm must be higher than hydraulic stall rpm.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Priority pressure is set too high. Go to your authorized dealer.</p> <p>---1/1</p>

SECONDARY STEERING SYSTEM CHECK—IF EQUIPPED

IMPORTANT: DO NOT operate secondary steering pump for more than 15 seconds with the steering in neutral or damage to the pump and motor can occur.



T7773BH1 -UN-05AUG92

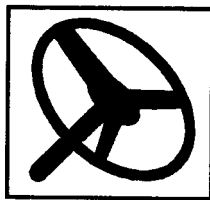


T6601AC -UN-19OCT88

Park machine on a hard level surface with bucket off of ground and steering straight ahead. Stop engine.

Without starting engine, turn key switch to START position and release.

Steer machine to right and left.



T7747AJ1 -UN-24AUG92

LOOK: Machine must steer approximately 1/2 way to stops in both directions. Light in monitor must come ON and stay ON until key switch is turned to STOP.

OK: Go to next check.

NOT OK: If secondary steering pump and motor do not operate, go to your authorized dealer.

If secondary steering pump and motor operate but machine does not steer, go to your authorized dealer.

-- -1/1

SECONDARY STEERING SYSTEM PRIMARY CHECK VALVE CHECK

Run engine at fast idle.

Turn steering wheel rapidly until frames are against stops. Hold approximately 22 N (5 lb force) pressure on steering wheel.

Actuate a hydraulic function and hold over relief. Return control lever to neutral.

FEEL: Steering wheel **MUST NOT** "kick back" as hydraulic function is released.

NOTE: Steering wheel "kickback" is normal on machines without secondary steering.

OK: Go to next check

NOT OK: Go to your authorized dealer.

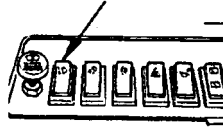
-- -1/1

8 ACCESSORY CHECKS

NOTE: Engine must be stopped and key switch must be ON for these checks

-- -1/1

OPERATING LIGHTS CHECK

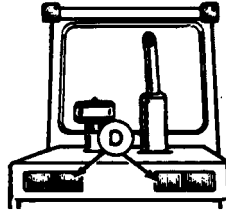


T7773B03 -UN-05AUG92

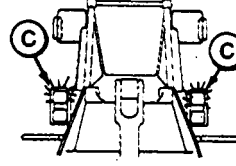
Push light switch.

Note light operation.

LOOK: Headlights (C), and taillights (D) must come on.



T6633AB -UN-18OCT88



T6637AA -UN-18OCT88

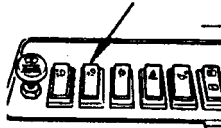
OK: Go to next check

NOT OK: Check fuse.

IF OK: Go to your authorized dealer.

-- -1/1

WORK LIGHT CHECK

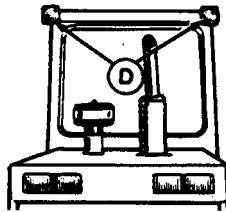


T7773B04 -UN-05AUG92

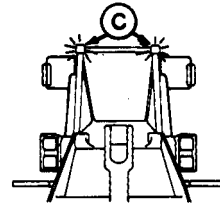
Push light switch.

Note light operation.

LOOK: Front work lights (C) and rear work lights (D) must come on.



T6633AB1 -UN-18OCT88



T6564OI -UN-19OCT88

OK: Go to next check

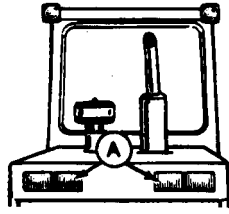
NOT OK: Check fuse.

IF OK: Check bulbs and replace as required. Go to your authorized dealer.

-- -1/1

Operational Checkout

BRAKE LIGHT CHECK



T6633AB3 -UN-18OCT88

Depress brake pedal and observe brake lights (A).

LOOK: Brake lights must come on.

NOTE: Brake light switch is a pressure switch. If accumulator is empty, engine may need to be started for brake lights to come on.

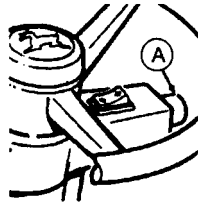
OK: Go to next check.

NOT OK: Check brake light fuse.

IF OK: Check bulbs, replace as required. Go to your authorized dealer.

-- -1/1

HORN CIRCUIT CHECK



T7747BJ1 -UN-21AUG92

Push horn button (A).

LISTEN: Horn must sound.

OK: Go to next check

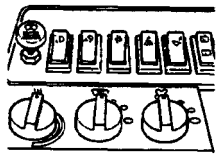
NOT OK: Check fuse

IF OK: Check wiring and ground at horn. Go to your authorized dealer.

-- -1/1

Operational Checkout

WINDSHIELD WASHER AND WIPER CHECK—IF EQUIPPED



T7773AN -UN-05AUG92

Turn front wiper switch knob clockwise to first detent, then to second position.

LOOK: Front wiper must operate at slow speed with switch in first detent, and fast speed with switch in second position.

Push knob in to turn front washer on.

LOOK: Washer must spray water on windshield.

Turn wiper off.

LOOK: Front wiper must park at side of windshield.

Push rear wiper switch down to first detent position.

LOOK: Rear wiper must operate at one speed with switch in first detent.

Push rear wiper switch past detent to turn rear washer on.

LOOK: Washer must spray water on rear window.

Turn wiper off.

LOOK: Rear wiper must park at side of rear window.

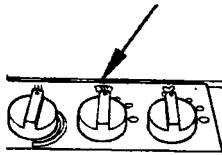
OK: Go to next check.

NOT OK: If wiper and washer do not work, check fuses.

IF OK: Check wiring. Go to your authorized dealer.

--1/1

DEFROSTER BLOWER CHECK



T7773BP2 -UN-05AUG92

Turn defroster blower switch knob to low, medium and high speeds. (Heater blower will also come on automatically.)

FEEL & LISTEN: Blower must have three speeds and OFF.

OK: Go to next check

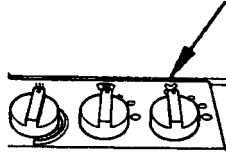
NOT OK: Check fuse.

IF OK: Go to your authorized dealer.

--1/1

Operational Checkout

HEATER/AIR CONDITIONER BLOWER CHECK



T7773BP3 -UN-05AUG92

Turn blower switch knob to low, medium and high speeds.

FEEL & LISTEN: Blower must have three speeds and OFF.

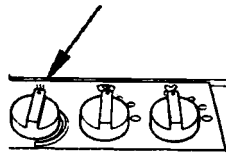
OK: Go to next check

NOT OK: Check fuse.

IF OK: Go to your authorized dealer.

-- -1/1

HEATER FUNCTIONAL CHECK



T7773BP1 -UN-05AUG92

Open heater shut-off valve on water pump.

Start engine. Run at fast idle.

Wait 2 minutes.

Turn temperature control knob to maximum heat position.

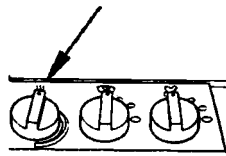
FEEL: Air from ducts must be warm.

OK: Go to next check

NOT OK: Go to your authorized dealer.

-- -1/1

AIR CONDITIONER FUNCTIONAL CHECK



T7773BP1 -UN-05AUG92

Start engine and run at fast idle.

Turn air conditioner switch to maximum COOL setting.

Wait for any warm air in duct system to dissipate.

FEEL: Air from ducts must be cool.


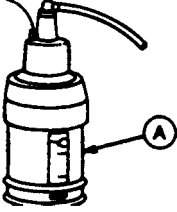
OK: Go to next check

NOT OK: Check fuse.

IF OK: Go to your authorized dealer.

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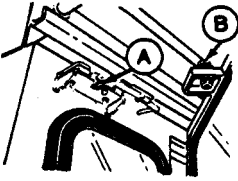
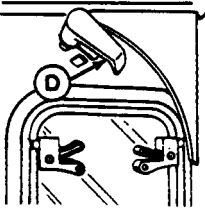
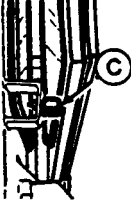
Operational Checkout

<p>START AID SYSTEM CHECK</p>	<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>T7747AI1 -UN-14SEP92</p> </div> <div style="text-align: center;"> <p>T6477AP -UN-19OCT88</p> </div> </div> <p>Start engine and run at slow idle.</p> <p>Momentarily push start aid button.</p> <p><i>LISTEN: Engine speed must increase slightly.</i></p> <p><i>LOOK: Light in monitor must come ON when button is pushed.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Check for empty start aid can (A).</p> <p>IF OK: Check fuse. Replace.</p> <p>NOT OK: If light does not come ON, go to your authorized dealer.</p>
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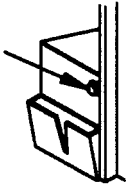
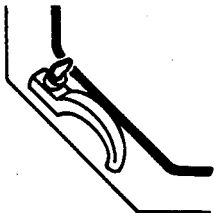

⑨ CAB COMPONENT AND VANDAL PROTECTION CHECKS

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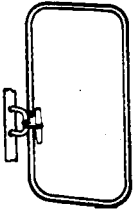
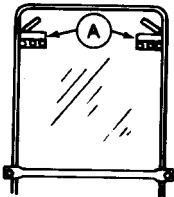
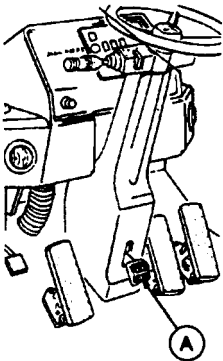
<p>CAB DOOR AND WINDOW HOLD-OPEN LATCH CHECK</p>	<div style="display: flex; justify-content: space-around; align-items: center;">    </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <p>T6633AK -UN-18OCT88</p> </div> <div style="text-align: center;"> <p>T6633AN -UN-18OCT88</p> </div> <div style="text-align: center;"> <p>T6633AJ -UN-18OCT88</p> </div> </div> <p>Push window and door to full open position.</p> <p>Release window and door by turning lever (D) clockwise.</p> <p><i>LOOK: Pin (B) must fit into latch notch (A). Latch must retain door and window against rubber stops (C).</i></p>	<p>OK: Go to next check</p> <p>NOT OK: Adjust rubber stop. Repair latch.</p>
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Operational Checkout

CAB DOOR RELEASE BUTTON	 <p>T7832AJ -UN-27AUG92</p>	<p>Press door release button.</p> <p><i>LOOK & LISTEN: Latch must click and release door.</i></p>	<p>OK: Go to next check</p> <p>NOT OK: If latch does not release, check fuse.</p> <p>IF OK: Go to your authorized dealer.</p> <p>NOT OK: If door does not latch tightly, adjust latch assembly.</p> <p>-- -1/1</p>
CAB DOOR LOCK CHECK	 <p>T6564PB -UN-19OCT88</p>	<p>Lock cab door.</p> <p><i>LOOK: Cab door handle MUST NOT move.</i></p> <p><i>FEEL: Lock must operate freely and key must not stick in lock.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Lubricate or repair lock.</p> <p>-- -1/1</p>
DOME LIGHT CHECK Key switch OFF.	 <p>T7832AI -UN-24AUG92</p>	<p>Move each dome light toggle switch to ON position.</p> <p><i>LOOK: Dome lights must come on.</i></p> <p>Turn both switches OFF.</p>	<p>OK: Go to next check.</p> <p>NOT OK: Check fuse and bulb.</p> <p>-- -1/1</p>

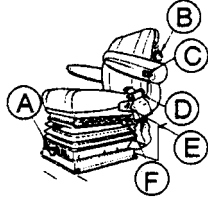
Operational Checkout

CAB WINDOW LATCH CHECK	 <p>T6633AO -UN-18OCT88</p> <p>Inspect window seals.</p> <p>Open right side cab window. Pull window closed.</p> <p><i>LOOK: Latch must hold window tightly closed.</i></p> <p><i>LOOK: Window seals MUST NOT have gaps between seals and window frames.</i></p> <p>Position latch outer notch (A) over catch.</p> <p>Open latch.</p> <p><i>LOOK: When window latch is in outer notch position, window must be held slightly open.</i></p>	<p>OK: Go to next check</p> <p>NOT OK: Lubricate latch. Replace window seals if necessary.</p> <p>-- -1/1</p>
CAB DOOR WINDOW CHECK	 <p>T7409AQ -UN-27NOV90</p> <p>Inspect window seals.</p> <p>Open sliding window to maximum open position and back to 1/2 open notch and release latches (A).</p> <p>Close sliding window.</p> <p><i>LOOK: Latches must hold window tightly closed, and hold in any notched position.</i></p> <p><i>LOOK: Window seals must not have gaps between seals and window frames.</i></p>	<p>OK: Go to next check</p> <p>NOT OK: Oil latch. Replace window seals if necessary.</p> <p>-- -1/1</p>
STEERING COLUMN ADJUSTMENT CHECK	 <p>T7773BQ -UN-05AUG92</p> <p>Depress pedal (A) and move steering wheel column to all positions.</p> <p>Release pedal at each position.</p> <p><i>LOOK: When pedal is released, steering column must lock securely in that position.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Check and adjust pedal linkage.</p> <p>-- -1/1</p>

Operational Checkout

SEAT AND SEAT BELT CHECK

IMPORTANT: Replace the complete seat belt assembly every three years regardless of appearance. A date label, to determine the age of the belt, is attached to each seat belt.



T7747AP -UN-21AUG92

Standing over seat reach down and lift seat assembly to top of travel then let go. Lift seat slowly until latch "clicks", and release seat. Repeat for upper latch.

LOOK & FEEL: Seat must have 3 positions and must latch in 2 upper positions.

Inspect seat shell and suspension for cracks, broken welds or looseness.

LOOK: Seat must be in safe condition.

Check seat adjustment functions (A, B, C, E, F).

LOOK: Seat must adjust freely and remain in locked position.

Bounce on seat to check suspension operation.

FEEL: Seat suspension must not bottom out and must support operator's weight.

Inspect seat belt (D) for damage.

LOOK: Seat belt must lock and not be damaged or worn.

FEEL: Seat belt must stay adjusted snugly and not slip in adjuster.

OK: Go to next check

NOT OK: Replace any worn or broken parts. Lubricate moving parts of suspension and seat adjusters. Go to your authorized dealer.

--1/1

TOOLBOX DOOR CHECK

Unlock and open toolbox door under seat in operator's station.

Close and lock door.

LOOK: Door must open and close smoothly.

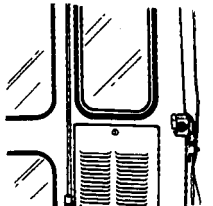
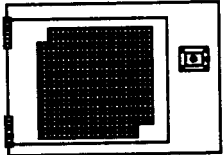
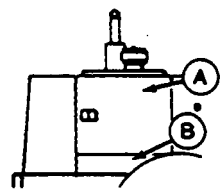
FEEL: Lock must operate freely and key **MUST NOT** stick in lock.

OK: Go to next check.

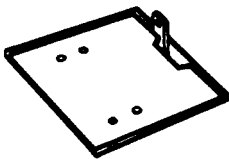
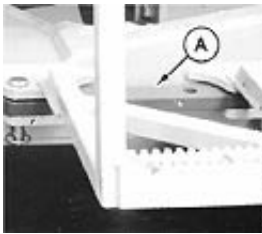
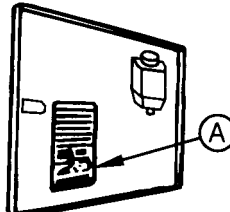
NOT OK: Lubricate hinges. Lubricate or repair lock.

--1/1

Operational Checkout

<p>AIR INTAKE FILTER DOOR CHECK</p>	 <p>T6633AW -UN-18OCT88</p> <p>Unlock and open door on left side of operator's station.</p> <p>Close and lock door.</p> <p><i>LOOK: Door must open and close smoothly.</i></p> <p><i>FEEL: Lock must operate freely and key MUST NOT stick in lock.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Lubricate hinges. Lubricate or repair lock.</p> <p style="text-align: right;">-- -1/1</p>
<p>LOAD CENTER DOOR CHECK</p>	 <p>T7832AK -UN-27AUG92</p> <p>Unlock and open door on right side of operator's station.</p> <p>Close and lock door.</p> <p><i>LOOK: Door must open and close smoothly.</i></p> <p><i>FEEL: Lock must operate freely and key MUST NOT stick in lock.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Lubricate hinges. Lubricate or repair lock.</p> <p style="text-align: right;">-- -1/1</p>
<p>ENGINE SIDE PANELS CHECK</p>	 <p>T6633AS -UN-18OCT88</p> <p>Unlock and open side panel (A).</p> <p>Latch side panel in open position.</p> <p>Pull rear of panel up and slide out side panel (B).</p> <p>Install side panel (B).</p> <p>Close panel (A).</p> <p><i>LOOK: Panels must open and close smoothly.</i></p> <p><i>FEEL: Latch must operate freely and locking tab must be able to accept a padlock.</i></p> <p>Repeat with other side.</p>	<p>OK: Go to next check.</p> <p>NOT OK: Lubricate hinges. Repair latch.</p> <p style="text-align: right;">-- -1/1</p>

Operational Checkout

RADIATOR CAP ACCESS DOOR CHECK	 <p>T6633AY –UN–18OCT88</p> <p>Open and close access door on top of grille housing.</p> <p><i>LOOK: Door must move freely. Locking pin for padlock MUST NOT be bent.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Lubricate hinges. Repair door.</p> <p style="text-align: right;">-- -1/1</p>
FRAME LOCKING BAR CHECK	 <p>T7799CX –UN–23SEP92</p> <p><i>LOOK: Red frame locking bar must be pinned to engine frame below left side cab step.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Order new parts and install new locking bar and pins.</p> <p style="text-align: right;">-- -1/1</p>
BOOM LOCK CHECK	<p><i>LOOK: Red boom lock must be fastened to front frame at hinge in vertical position.</i></p>	<p>OK: Go to next check.</p> <p>NOT OK: Order new parts and install new boom lock.</p> <p style="text-align: right;">-- -1/1</p>
SERVICE DECAL CHECK	 <p>T8385AC –UN–15DEC94</p> <p>Check service decal (A) above left side battery compartment.</p> <p><i>LOOK: Service decal must be legible.</i></p>	<p>OK: Operational Checkout completed.</p> <p>NOT OK: Replace service decal.</p> <p style="text-align: right;">-- -1/1</p>

Troubleshooting

USING TROUBLESHOOTING CHARTS

NOTE: Troubleshooting charts are arranged from the simplest to verify, to least likely, more difficult to verify. When diagnosing a problem, use all possible means to isolate the problem to a single component or system. Use the following steps to diagnose problems:

Step 1. Operational Checkout Procedure.

Step 2. Troubleshooting charts.

Step 3. Adjustments.

Step 4. See your authorized dealer.

TX,FF,105 -19-15JUL94-1/1

ENGINE

Symptom	Problem	Solution
Engine Will Not Start Or Starts Hard	Fuel tank empty.	Check fuel quantity.
	Fuel tank vent hose clogged.	Loosen cap and listen for air rushing into tank. Clean or replace hose.
	Water in fuel or water frozen in line.	Drain water from fuel tank. Inspect fuel filter(s) for water. Change filter(s).
	Fuel shut-off fuse.	Replace fuse.
	Fuel filter(s) clogged.	Inspect and replace fuel filter(s).
	Incorrect grade of fuel.	Drain fuel tank and add correct fuel.
	Air leak on suction side of fuel system.	Check and tighten connection. Check fuel lines for damage.
	644G—Fuel shut-off solenoid incorrectly adjusted.	Adjust so fuel shut-off lever is against run stop on injection pump.
	544G, LL, TC, 624G—Injection pump metering valve sticking.	Lightly tap injection pump housing. If engine starts, see your authorized dealer.
	544G, LL, TC, 624G—Electric shut-off.	See your authorized dealer.
	Fuel pump.	See your authorized dealer.
	Slow cranking speed.	Check batteries and connections.
	Restricted air filter(s).	Check air filter restriction indicator and air filter(s).
	Incorrect injection pump timing.	See your authorized dealer.
	644G—Fuel drains from filter(s) with engine stopped, due to leakage in check valve.	Disconnect filter inlet line from check valve. Inspect for leakage.

Continued on next page
TX,100,DH2481 -19-02OCT92-1/12

Symptom

Problem

Solution

**Engine Surges Or Stalls
Frequently**

Injection nozzle(s).

See your authorized dealer.

Low compression or blown head gasket.

544G, LL, TC, 624G—Remove fuel shut-off fuse. Crank engine and listen for air leaking past valves or an uneven starter speed. Start engine and observe blow-by from vent tube. See your authorized dealer.

Fuel injection pump.

See your authorized dealer.

Fuel tank vent hose clogged.

Loosen cap and listen for air rushing into tank. Clean or replace hose.

Incorrect grade of fuel.

Drain fuel tank and add correct fuel.

Water in fuel or water frozen in line.

Drain water from fuel tank trap. Inspect fuel filter(s) for water. Change filter(s).

Fuel filter(s) clogged.

Replace filter(s).

Air leak on suction side of fuel system.

Check and tighten connections. Check fuel lines for damages.

Fuel pump.

See your authorized dealer.

Fuel return line from injection pump to tank restricted.

Disconnect fuel return line from injection pump. Connect a hose to pump and route fuel into a container. If engine runs normally, return hose is restricted.

644G—Clogged overflow valve in injection pump.

See your authorized dealer.

Restrictor fitting on top fitting in injection pump clogged.

Remove, inspect and clean.

Continued on next page

TX,100,DH2481 -19-02OCT92-2/12

Symptom	Problem	Solution
	544G, LL, TC, 624G—Injection pump metering valve sticking.	Lightly tap injection pump housing. If engine starts, see your authorized dealer.
	Fuel injection pump out of time.	See your authorized dealer.
	Engine overheating.	See your authorized dealer.
	644G—Incorrect slow idle, or supplementary idling screw adjustment.	Check and adjust slow idle. See your authorized dealer.
	Incorrect valve clearance.	Check and adjust valve clearance. (See Maintenance—Every 1000 Hours chapter.)
	Valves sticking or burned.	Remove fuel shut-off fuse. Crank engine and listen for air leaking past valves or an uneven starter speed. See your authorized dealer.
	Worn or broken compression rings or cylinder head gasket leaking.	Start engine and observe blow-by from vent tube. See your authorized dealer.
	Injection nozzle(s).	See your authorized dealer.
	Injection pump.	See your authorized dealer.
Engine Misses	Air in fuel.	Disconnect return hose from leak-off lines. Crank engine and check for air in fuel at leak-off lines. Tighten connections. Check fuel lines for damage.
	Incorrect grade of fuel.	Drain fuel tank and add correct fuel.
	Fuel injection pump out of time.	See your authorized dealer.

Symptom	Problem	Solution
Engine Does Not Develop Full Power	Slow idle speed too low.	Check slow idle speed. (See Maintenance—Every 1000 Hours chapter.) See your authorized dealer.
	Fuel pump.	See your authorized dealer.
	Engine overheats.	See your authorized dealer.
	Incorrect valve clearance.	Check and adjust valve clearance. (See Maintenance—Every 1000 hours chapter.)
	Bent push rods.	See your authorized dealer.
	Valve sticking or burned.	Remove fuel shut-off fuse. Crank engine and listen for air leaking past valves or an uneven starter speed. See your authorized dealer.
	Cylinder head gasket leaking.	See your authorized dealer.
	Worn or broken compression rings.	See your authorized dealer.
	Injection nozzle(s).	See your authorized dealer.
	Injection pump.	See your authorized dealer.
	Fuel tank vent hose clogged.	Loosen fuel cap and listen for air rushing into tank. Clean or replace hose.
	Fuel shut-off solenoid lever not against stop on injection pump.	Adjust solenoid. (See Adjusting Fuel Shut-Off Solenoid in Maintenance chapter.)
	Air intake system restricted.	Check air filter elements and air filter restriction indicator switch. (See Maintenance—As Required chapter.)
	Incorrect grade of fuel.	Drain fuel tank and add correct fuel. (See Fuels and Lubricants chapter.)

Continued on next page
TX,100,DH2481 -19-02OCT92-4/12

Symptom	Problem	Solution
	Excess drag in transmission.	See your authorized dealer.
	Excess drag in brakes.	Check service and park brake drag. See your authorized dealer.
	Fast idle speed set too low.	Check and adjust fast idle. See your authorized dealer.
	Fuel filter(s) clogged.	Change filter(s).
	Fuel line restricted.	Check for pinched or kinked lines or debris in lines. Route return line into separate container. If engine operation returns to normal, repair fuel return system lines.
	Fuel pump.	See your authorized dealer.
	Clogged overflow valve in injection pump.	See your authorized dealer.
	544G, LL, TC, 624G—Restrictor fitting on top fitting in injection pump clogged.	Remove, inspect and clean.
	544G, LL, TC, 624G—Injection pump metering valve sticking.	Lightly tap injection pump housing. If engine starts, see your authorized dealer.
	Incorrect injection pump timing.	See your authorized dealer.
	Air leak in intake manifold.	See your authorized dealer.
	Incorrect valve clearance.	Check and adjust valve clearance. (See Maintenance—Every 1000 Hours chapter.)
	Worn camshaft.	See your authorized dealer.

Symptom

Problem

Solution

Engine Emits Excessive Black Or Gray Exhaust Smoke

Turbocharger.

Remove air intake hose and exhaust elbow. Leading edge of compressor vanes must be sharp and straight. Spin compressor wheel and listen for noisy bearings. Turbine and compressor wheels must not rub in housing.

Muffler restricted.

Run engine without muffler. If engine operation is now normal, install a new muffler.

Low compression.

Remove fuel shut-off fuse. Crank engine and listen for air leaking past valves or an uneven starter speed. Start engine and observe blow-by from vent tube. See your authorized dealer.

Injection nozzle(s).

See your authorized dealer.

Incorrect camshaft timing.

See your authorized dealer.

Injection pump.

See your authorized dealer.

Restricted air filter.

Check air filter restriction indicator and air filter(s). (See Maintenance—As Required chapter.) Replace.

Incorrect grade of fuel.

Drain fuel tank and add correct fuel. (See Fuels and Lubricants chapter.)

Incorrect injection pump timing.

See your authorized dealer.

Air leak between turbo and manifold.

See your authorized dealer.

Excessive fuel delivery.

See your authorized dealer.

Injection nozzle(s).

See your authorized dealer.

Symptom	Problem	Solution
	Turbocharger.	Remove air intake hose and exhaust elbow. Leading edge of compressor vanes must be sharp and straight. Spin compressor wheel and listen for noisy bearings. Turbine and compressor wheels must not rub in housing.
Engine Emits Excessive Blue Or White Smoke	Cranking speed too low.	Check batteries and connections.
	Incorrect grade of fuel.	Drain fuel tank and add correct fuel. (See Fuel and Lubricants chapter.)
	Injection pump out of time.	See your authorized dealer.
	Engine running too cold.	See your authorized dealer.
	Injection nozzle(s).	See your authorized dealer.
	Low compression.	Remove injection pump fuse. Crank engine and listen for air leaking past valves. Start engine and observe blow-by from vent tube. See your authorized dealer.
	Excessive wear in liners and/or piston rings stuck.	See your authorized dealer.
	Worn valve guides.	See your authorized dealer.
Slow Acceleration.	Incorrect grade of fuel.	Drain fuel tank and add correct fuel.
	Fuel injection pump.	See your authorized dealer.
	Injection nozzle(s).	See your authorized dealer.
Detonation	Starting aid solenoid stuck open.	See your authorized dealer.
	Incorrect injection pump timing.	See your authorized dealer.
	Incorrect injection pump advance.	See your authorized dealer.

Symptom	Problem	Solution
Abnormal Engine Noise	Low or incorrect engine oil.	Add correct oil.
	Loose or worn dampener drive.	See your authorized dealer.
	Engine oil diluted with fuel.	Inspect engine oil. Inspect fuel pump spindle, seal, and housing. Clean and use or replace.
	Incorrect fuel injection pump timing.	See your authorized dealer.
	Turbocharger.	See your authorized dealer.
	Excessive valve clearance.	Adjust valve clearance. (See Maintenance—Every 1000 Hours chapter.)
	Bent push rods.	See your authorized dealer.
	Worn rocker arm shafts.	See your authorized dealer.
	Loose connecting rod caps.	See your authorized dealer.
	Loose main bearing caps.	See your authorized dealer.
	Worn main bearing.	See your authorized dealer.
	Worn connecting rod bearings.	See your authorized dealer.
	Incorrect camshaft timing.	See your authorized dealer.
	Scored piston.	See your authorized dealer.
	Worn piston pin bushings and pins.	See your authorized dealer.
Low Oil Pressure	Low oil level.	Add oil.
	Wrong viscosity oil or oil diluted with diesel fuel.	Change oil. 644G—inspect fuel pump spindle, seal, and housing. 544G, LL, TC, 624G,—inspect fuel pump diaphragm. Clean and use or replace.

Continued on next page
TX,100,DH2481 –19–02OCT92–8/12

Symptom	Problem	Solution
	Oil pressure gauge or sensor.	See your authorized dealer.
	Oil pressure regulating valve.	See your authorized dealer.
	Turbocharger shaft seal leaking.	See your authorized dealer.
	Clogged oil pump intake screen.	See your authorized dealer.
	Loose oil pump drive gear.	See your authorized dealer.
	Worn oil pump gear or housing.	See your authorized dealer.
	Excessive main bearing clearance.	See your authorized dealer.
	Excessive connecting rod bearing clearance.	See your authorized dealer.
	Cracked cylinder block.	See your authorized dealer.
	Piston cooling orifice missing.	See your authorized dealer.
	Leakage at internal oil passage.	See your authorized dealer.
	Wrong viscosity oil (too thick).	Check for antifreeze in oil. Change oil.
High Oil Pressure	Oil pressure gauge or sender.	See your authorized dealer.
	Oil pressure regulating valve.	See your authorized dealer.
Engine Overheats	Low coolant level.	Fill cooling system and check for leaks.
	Low engine oil level.	Add oil.
	Loose or broken fan belt.	Tighten or replace belt.
	Fan on backwards, damaged, or wrong fan installed.	Check for correct fan installation.
	Radiator dirty, clogged, or fins damaged.	Check air flow. Clean radiator. Straighten fins.

Continued on next page
TX,100,DH2481 -19-02OCT92-9/12

Symptom	Problem	Solution
	Radiator shroud missing, damaged, or baffles missing.	Inspect. Repair or replace.
	Engine overloaded.	Reduce load.
	Incorrect grade of fuel.	Drain fuel tank and add correct fuel.
	Radiator cap.	Replace cap.
	Faulty gauge or sender.	See your authorized dealer.
	Incorrect injection pump timing.	See your authorized dealer.
	Faulty thermostats (stuck).	See your authorized dealer.
	Thermostats missing.	See your authorized dealer.
	Cooling system coated with lime deposits.	Flush cooling system.
	Excessive brake drag.	See your authorized dealer.
	Excessive transmission drag.	See your authorized dealer.
	Water pump.	See your authorized dealer.
	Excessive fuel delivery.	See your authorized dealer.
	Scored piston.	See your authorized dealer.
	Combustion leak into cooling system.	Remove radiator cap. Start engine and check for bubbles in radiator.
Engine Runs Cold	Temperature gauge or sender.	See your authorized dealer.
	Thermostat (stuck open).	See your authorized dealer.
Oil In Coolant Or Coolant In Oil	Leaking heat exchanger.	See your authorized dealer.
	Leaking cylinder head gasket.	See your authorized dealer.
	Leaking cylinder liner packings.	See your authorized dealer.

Continued on next page
TX,100,DH2481 -19-02OCT92-10/12

Symptom	Problem	Solution
Excessive Fuel Consumption	Cracked cylinder liner.	See your authorized dealer.
	Cracked cylinder block.	See your authorized dealer.
	Air system restricted.	Check filter restriction indicator and air filters. Replace. (See Maintenance—As Required chapter.)
	Leakage in fuel system.	Inspect and repair.
	Incorrect grade of fuel.	Drain and refill with correct fuel.
	Incorrect injection pump timing.	See your authorized dealer.
Turbocharger Excessively Noisy Or Vibrates	Turbocharger.	Remove air intake hose and exhaust elbow. Leading edge of compressor vanes must be sharp and straight. Spin compressor wheel to check for rough bearings. Turbine and compressor wheels must not rub in housing.
	Faulty injection nozzle(s).	See your authorized dealer.
	Bearings not lubricated.	Insufficient oil pressure. Check for restricted turbocharger oil line.
	Air leak in engine, intake or exhaust manifold.	See your authorized dealer.
	Incorrect clearance between turbine wheel and turbine housing.	Remove exhaust elbow and air inlet hose. Inspect and repair.
Oil Dripping From Turbocharger Adapter	Broken blades on turbine.	Remove exhaust elbow and air inlet hose. Inspect and repair.
	Damaged or worn bearings and/or worn seals.	Inspect compressor and turbine wheel for damaged blades. Check for proper engine service intervals or dirt entering engine.
	Excessive crankcase pressure.	Check for clogged vent tube. Clean.

Continued on next page

TX,100,DH2481 -19-02OCT92-11/12

Troubleshooting

Symptom	Problem	Solution
Excessive Drag In Turbocharger Rotating Members	Carbon build-up in turbocharger oil return line where line passes exhaust manifold.	Remove line. Inspect and clean.
	Carbon build-up behind turbine wheel caused by combustion deposits.	See your authorized dealer.
	Dirt build-up behind compressor wheel caused by air intake leaks.	See your authorized dealer.
	Bearing seizure of dirty or worn bearings caused by excessive temperature, unbalanced wheel, dirty oil, oil starvation, or insufficient lubrication.	Check for clogged air filters.

TX,100,DH2481 -19-02OCT92-12/12

ELECTRICAL SYSTEM

Symptom	Problem	Solution
Nothing Works	Power circuit components.	See your authorized dealer.
	Battery undercharged or dead.	See your authorized dealer.
	Battery cables making poor connections.	Clean cable connections at battery and starter solenoid.
	Neutral start fuse.	Replace fuse.
Starter Will Not Crank Engine	Battery undercharged or dead.	See your authorized dealer.
	Battery cables making poor connections.	Clean connections at battery, starter, and ground to frame.
	Start relay.	See your authorized dealer.
	Starter solenoid.	See your authorized dealer.
	Fuel shut-off solenoid.	See your authorized dealer.
	Starter motor.	See your authorized dealer.
	Starter motor pinion "jammed" in flywheel gear.	See your authorized dealer.
	Key switch.	See your authorized dealer.
	Transmission control lever.	See your authorized dealer.
	Engine.	See your authorized dealer.
Engine Cranks Slowly	Batteries undercharged.	See your authorized dealer.
	Starter armature bearings worn, causing starter "drag".	See your authorized dealer.
	Battery cable connections loose or corroded.	Clean and/or tighten connections.

Continued on next page

TX,100,DH2482 -19-02OCT92-1/8

Symptom	Problem	Solution
Starting Motor Turns, But Engine Will Not Crank	Starter pinion not engaging flywheel ring gear.	See your authorized dealer.
	Starter pinion or flywheel gear teeth broken.	See your authorized dealer.
Starting Motor Continues To Run After Engine Starts	Starter solenoid stuck.	See your authorized dealer.
	Starter not disengaging.	See your authorized dealer.
	Starter relay stuck.	See your authorized dealer.
	Key switch.	See your authorized dealer.
	Wiring harness shorted.	See your authorized dealer.
Battery Using Too Much Water	Battery being overcharged.	See your authorized dealer.
	High ambient temperature.	Refill with distilled water.
	Cracked battery case.	Replace battery. Install hold down correctly.
Low Battery Output	Low water level.	(See "Battery Using Too Much Water" and "Cracked Battery Case" in this group.)
	Dirty or wet battery top, causing discharge.	Clean battery and wipe dry.
	Corroded or loose battery cable ends.	Clean and tighten cable end clamps. Recharge battery. If unit has two batteries, recharge separately.
	Broken or loose battery posts.	Move posts by hand. If posts are loose or will turn, replace battery. If unit has two batteries, replace both batteries.
	Loose fan/alternator belt, or worn pulleys.	Inspect belt or pulley. Adjust or replace as necessary.

Continued on next page
TX,100,DH2482 -19-02OCT92-2/8

Symptom	Problem	Solution
Starter Solenoid Chatters	Poor connections at batteries or starter.	Clean connections.
	Low battery charge.	Recharge or replace batteries.
	Starter solenoid "hold-in" windings open.	See your authorized dealer.
Engine Cranks But Does Not Start	Fuel shut-off solenoid.	See your authorized dealer.
	Key switch.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Start Aid Does Not Work	Empty start aid can.	Replace start aid can.
	Start aid switch.	See your authorized dealer.
	Start aid solenoid.	See your authorized dealer.
Noisy Alternator	Worn drive belt.	Inspect and replace.
	Pulley misaligned.	Adjust alternator mount.
	Alternator bearing.	Loosen alternator belts. Turn pulley by hand. If any roughness is felt, repair alternator.
	Internal alternator.	See your authorized dealer.
Charging Indicator Light Remains ON	Loose or glazed alternator belt.	Check belt. Replace if glazed, tighten if loose.
	Engine rpm low.	Raise engine rpm. If light remains on, see your authorized dealer.
	Excessive electrical load from added accessories.	Remove accessories or install higher output alternator.
	Loose or corroded electrical connections on battery, ground strap, starter, or alternator.	Inspect, clean, or tighten electrical connections.

Symptom	Problem	Solution
Hour Meter Does Not Work	Alternator.	See your authorized dealer.
	Display monitor.	See your authorized dealer.
	Key switch.	See your authorized dealer.
	Hour meter.	See your authorized dealer.
Fuel Gauge Displays One Flashing Arrow	Wiring harness.	See your authorized dealer.
	Fuel gauge.	See your authorized dealer.
	Fuel gauge sender.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Transmission Temperature Gauge Displays Nine (9) Arrows	Gauge.	See your authorized dealer.
	Gauge sender.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
No Display Monitor Functions	Key switch.	See your authorized dealer.
	Display monitor.	See your authorized dealer.
	Logic module.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Individual Light In Monitor Panel Is Inoperative (Not During Bulb Check)	Sending unit for that function.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
	Monitor panel.	See your authorized dealer.
Individual Light In Monitor Panel Is Inoperative (During Normal Operation And Bulb Check)	Bulb.	Inspect and replace.
	Display monitor.	See your authorized dealer.

Continued on next page
TX,100,DH2482 -19-02OCT92-4/8

Symptom	Problem	Solution
Horn Inoperative	Fuse.	Replace fuse.
	Horn.	See your authorized dealer.
	Horn switch.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Reverse Alarm Does Not Work	Fuse.	Replace fuse.
	Reverse alarm.	See your authorized dealer.
	Reverse alarm switch.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Return-To-Dig Does Not Work	Fuse.	Replace fuse.
	Proximity switch.	See your authorized dealer.
	Solenoid.	See your authorized dealer.
	Accessory relay.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Front Or Rear Wiper Does Not Work	Wiper fuse.	Replace fuse.
	Wiper switch.	See your authorized dealer.
	Wiper motor.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Defrost Fan Motor Does Not Work	Fuse.	Replace fan fuse.
	Fan switch.	See your authorized dealer.
	Fan motor resistor.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.

Continued on next page
TX,100,DH2482 -19-02OCT92-5/8

Symptom	Problem	Solution
Defrost Fan Motor Does Not Work In All Speeds	Fan motor switch.	See your authorized dealer.
	Fan motor resistor.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Pressurizer Fan Motor Does Not Work	Fuse.	Replace fuse.
	Fan motor switch.	See your authorized dealer.
	Fan motor resistor.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Cab Work Lights Do Not Operate	Fuse.	Replace fuse.
	Light switch.	See your authorized dealer.
	Cab work light relay.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Driving Lights Do Not Work	Fuse.	Replace fuse.
	Driving light switch.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Dome Light Does Not Work	Bulb.	Replace bulb.
	Fuse.	Replace fuse.
	Dome light switch.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Turn Signals Do Not Operate	Accessory relay.	See your authorized dealer.
	Fuse.	Replace fuse.
	Turn signal flasher.	See your authorized dealer.

Continued on next page
TX,100,DH2482 -19-02OCT92-6/8

Symptom	Problem	Solution
Brake Lights Do Not Operate	Turn signal switch.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
	Fuse.	Replace fuse.
	Brake light switch.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
Differential Lock Does Not Work	Key switch.	See your authorized dealer.
	Accessory relay.	See your authorized dealer.
	Fuse.	Replace fuse.
	Differential lock switch.	See your authorized dealer.
	Differential lock solenoid.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
	Key switch.	See your authorized dealer.
Secondary Steering Does Not Operate	Fuse.	Replace fuse.
	Neutral start switch.	See your authorized dealer.
	Start circuit relay.	See your authorized dealer.
	Secondary steering controller.	See your authorized dealer.
	Secondary steering switch.	See your authorized dealer.
	Secondary steering motor solenoid.	See your authorized dealer.
	Secondary steering pump motor.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
	Secondary steering controller.	See your authorized dealer.
	Secondary steering controller.	See your authorized dealer.
Secondary Steering Indicator Light Does Not Operate		
	Secondary steering controller.	See your authorized dealer.

Continued on next page
TX,100,DH2482 -19-02OCT92-7/8

Troubleshooting

Symptom	Problem	Solution
	Indicator light bulb.	Replace bulb.
	Secondary steering light relay.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.

TX,100,DH2482 -19-02OCT92-8/8

HYDRAULIC SYSTEM

Symptom	Problem	Solution
Noisy Hydraulic Pump	Low oil supply or wrong viscosity.	Fill reservoir with proper oil.
	Suction line clogged or pinched.	Clean or replace line.
	Air in oil.	Check for foamy oil. Tighten connections. Replace O-rings and/or lines.
	Clogged suction strainer.	Inspect and clean strainer in reservoir.
	Loose or missing hydraulic line clamps.	Tighten or replace clamps.
	Hydraulic lines in contact with frame.	Inspect and repair.
	Worn or damaged pump.	See your authorized dealer.
Slow Hydraulic Functions	Cold oil.	Warm the oil.
	Suction line air leak.	Check for foamy oil.
	Low oil supply.	Fill reservoir with recommended oil.
	Wrong oil viscosity.	Use recommended oil.
	Slow engine speed.	Adjust engine speed control linkage. Check fast idle speed. (See Maintenance—Every 1000 Hours chapter.)
	Oil leaking past cylinders or control valve.	See your authorized dealer.
	Blocked or damaged line.	Inspect lines.
	Misadjusted pressure reducing valve.	See your authorized dealer.
	Pilot control valve.	See your authorized dealer.

Symptom	Problem	Solution
No Steering Or Hydraulic Functions	Binding loader control valve spool.	See your authorized dealer.
	Secondary steering check valve leaking.	See your authorized dealer.
	Steering valve leaking.	See your authorized dealer.
	Low oil level.	Check oil level.
	Clogged suction strainer.	Clean strainer in reservoir.
	Hydraulic pump.	See your authorized dealer.
No Hydraulic Functions, Steering Normal	Main hydraulic pump dampener drive.	See your authorized dealer.
	Main hydraulic pump drive.	See your authorized dealer.
	Boom lower solenoid valve ground wire shorted or wrong ground wire connected to solenoid.	See your authorized dealer.
	Boom lower solenoid valve stuck in actuated position.	See your authorized dealer.
	Misadjusted pressure reducing valve.	See your authorized dealer.
Boom Float Function Does Not Work	System relief valve.	See your authorized dealer.
	Pilot control pressure low.	See your authorized dealer.
	Loader control valve spool binding in bore.	See your authorized dealer.
	Pilot control valve.	See your authorized dealer.
Boom Down Does Not Work—Engine Off	Boom down switch not pushed.	Push switch.
	Electrical problem	See your authorized dealer.
One Hydraulic Function Does Not Work	Pilot control valve.	See your authorized dealer.

Continued on next page
TX,100,DH2483 -19-09SEP92-2/7

Symptom	Problem	Solution
	Circuit relief valve.	See your authorized dealer.
	Oil leaking past cylinder packings.	See your authorized dealer.
	Blockage in oil lines or valve.	See your authorized dealer.
	Loader control valve spool stuck in bore.	See your authorized dealer.
Low Hydraulic Power	Leakage within work circuit.	See your authorized dealer.
	Low system relief valve setting.	See your authorized dealer.
	Low circuit relief valve setting.	See your authorized dealer.
	Misadjusted pressure reducing valve.	See your authorized dealer.
	Leaking system relief valve.	See your authorized dealer.
	Worn hydraulic pump.	See your authorized dealer.
	Pilot control valve.	See your authorized dealer.
Functions Drift Down	Leaking cylinders.	See your authorized dealer.
	Leaking seals in circuit relief valve or valve stuck open.	See your authorized dealer.
	Leaking loader control valve.	See your authorized dealer.
Boom Drifts Up	Leakage in boom lower solenoid valve, or O-rings.	See your authorized dealer.
Oil Overheats	Low oil viscosity in hot weather.	Use recommended oil. (See Fuels and Lubricants chapter.)
	Excessive load.	Reduce load.
	Holding hydraulic system over relief.	Reduce load.
	Leakage in work circuit.	See your authorized dealer.
	Clogged fins in oil cooler.	Inspect and clean oil cooler.

Continued on next page
TX,100,DH2483 -19-09SEP92-3/7

Symptom	Problem	Solution
	Oil cooler clogged internally.	See your authorized dealer.
	Incorrect system or circuit relief valve setting.	See your authorized dealer.
	Restriction in oil lines or loader valve.	See your authorized dealer.
	Pinched or restricted priority valve "LS" line.	See your authorized dealer.
	Priority valve.	See your authorized dealer.
	Leaking system relief valve.	See your authorized dealer.
	Worn hydraulic pump (internal leakage).	See your authorized dealer.
Function Drops Before Raising When Valve Is Activated	Stuck open lift check.	See your authorized dealer.
Hydraulic Oil Foams	Low oil level.	Fill to correct level. (See Maintenance—Every 10 Hours or Daily chapter.)
	Wrong oil.	Change to recommended oil. (See Fuels and Lubricants chapter.)
	Water in oil.	Change oil. (See Maintenance—Every 3000 Hours chapter.)
	Loose or faulty suction lines (air leak in system).	Tighten or install new lines.
Slow Or Hard Steering	Cold oil.	Warm the hydraulic oil.
	Low priority valve pressure setting.	See your authorized dealer.
	Worn hydraulic pump.	See your authorized dealer.
	Sticking priority valve spool.	See your authorized dealer.
	Broken priority valve spring.	See your authorized dealer.
	Pinched or restricted "LS" line.	See your authorized dealer.

Continued on next page
TX,100,DH2483 -19-09SEP92-4/7

Symptom	Problem	Solution
No Steering	Secondary steering check valve leakage.	See your authorized dealer.
	Stuck priority valve spool.	See your authorized dealer.
	Broken priority valve spring.	See your authorized dealer.
	Relief valve in priority valve stuck open.	See your authorized dealer.
Constant Steering To Maintain Straight Travel	Air in system.	Check for foamy oil.
	Leakage in steering system.	See your authorized dealer.
	Worn steering valve.	See your authorized dealer.
	Broken centering springs in steering valve.	See your authorized dealer.
Slow Steering Wheel Movement Will Not Cause Any Frame Movement	Leakage in steering system.	See your authorized dealer.
	Worn steering valve gerotor.	See your authorized dealer.
Steering Wheel Can Be Turned With Frames Against Steering Stop	Leakage in steering system.	See your authorized dealer.
	Low crossover relief valve pressure setting.	See your authorized dealer.
Steering Wheel Turns With No Resistance And Causes No Frame Movement	Broken steering column or splined coupling.	See your authorized dealer.
	Lack of oil in steering valve.	Start engine and check steering operation.
	Leakage in steering system.	See your authorized dealer.
	Steering valve malfunction.	See your authorized dealer.
Erratic Steering	Air in oil.	Check for foamy oil.

Continued on next page
TX,100,DH2483 -19-09SEP92-5/7

Symptom	Problem	Solution
	Low oil level.	Add oil.
	Sticking priority valve spool.	See your authorized dealer.
	Loose cylinder piston.	See your authorized dealer.
	Damaged steering valve.	See your authorized dealer.
Spongy Or Soft Steering	Air in oil.	Check for foamy oil.
	Low oil level.	Add oil.
Free Play At Steering Wheel	Loose steering wheel nut.	Tighten.
	Worn or damaged splines on steering column or valve.	See your authorized dealer.
Steering Valve Binding Or Steering Wheel Does Not Immediately Return To Neutral When Released	Binding in steering column or misalignment of column.	See your authorized dealer.
	High return pressure.	Check for a pinched or damaged return line.
	Contamination in steering valve.	Inspect hydraulic filter for contamination. Repair cause of contamination. Flush hydraulic system. (See Maintenance—Every 3000 Hours chapter.)
Steering Valve Locks Up	Large particles of contamination in steering valve.	Inspect hydraulic filter for contamination. Repair cause of contamination. Flush hydraulic system. (See Maintenance—Every 3000 Hours chapter.)
	*Thermal shock	See your authorized dealer.
	Worn or damaged steering valve.	See your authorized dealer.

Continued on next page
TX,100,DH2483 -19-09SEP92-6/7

Troubleshooting

Symptom	Problem	Solution
Abrupt Steering Wheel Oscillation	Gerotor gear in steering valve not properly timed.	See your authorized dealer.
Steering Wheel Turns By Itself	Lines connected to wrong port.	Reconnect lines.
Vibration In Steering System Or Hoses Jump	High priority valve setting.	See your authorized dealer.
	Low crossover relief valve pressure setting.	See your authorized dealer.
Machine Turns In Opposite Direction	Lines to cylinders connected to wrong ports at steering valve or crossover relief valve.	See your authorized dealer.
Machine Turns When Steering Valve Is In Neutral	Steering valve leakage.	See your authorized dealer.
Steering Wheel Kickback	Failed check valve in secondary steering manifold block.	See your authorized dealer.
Secondary Steering Motor Will Not Run	Electrical problem.	See your authorized dealer.
	Pump seized up.	See your authorized dealer.
Secondary Steering Pump Runs But Will Not Steer Machine	Secondary steering manifold block primary check valve stuck open.	See your authorized dealer.
	Low relief valve setting.	See your authorized dealer.
	Pump or pump coupling.	See your authorized dealer.
"Jerky" Steering	Priority valve.	See your authorized dealer
<p><i>*Thermal shock is caused by a large temperature differential (approximately 30°C (50°F)) between the steering valve and hydraulic oil. If the steering is not operated for a long period of time and the orifice in the bottom of the priority valve spool is clogged, the steering valve may bind up when the steering is operated if the hydraulic oil is hot enough.</i></p>		

TX,100,DH2483 -19-09SEP92-7/7

POWER TRAIN

Symptom	Problem	Solution
Transmission Slippage	Low oil level.	Check and add oil.
	Wrong oil grade.	Check oil grade. (See Fuels and Lubricants chapter.)
	Weak or broken pressure regulating valve spring.	See your authorized dealer.
	Transmission pump suction screen restricted.	See your authorized dealer.
	Low transmission pump flow due to worn pump.	See your authorized dealer.
	Transmission control valve or gasket leakage.	See your authorized dealer.
	Clutch cut-off switch sticking.	See your authorized dealer.
	Restricted modulation orifice.	See your authorized dealer.
	Excessive transmission element leakage.	See your authorized dealer.
	Worn clutch disks.	See your authorized dealer.
Machine Will Not Move	Applied park brake.	See your authorized dealer.
	Low or no transmission pressure.	See Transmission Pressure Is Low, this group.
	Service brakes will not release.	See your authorized dealer.
	Stuck control valve spool.	See your authorized dealer.
	Broken shafts or gears.	Drain transmission oil to determine if large pieces of metal contamination are present.
	Broken drive shafts.	See your authorized dealer.

Symptom	Problem	Solution
Machine Does Not Engage In Low Gear	Broken ring or pinion gear.	See your authorized dealer.
	Transmission control solenoid valve.	See your authorized dealer.
	Stuck spool in transmission control valve.	See your authorized dealer.
Transmission Will Not Shift Correctly	Stuck modulation valve.	See your authorized dealer.
	Transmission shifts fast in 4th gear automatic.	Wrong transmission controller for machine model number. See your authorized dealer.
	Transmission will not shift out of 2nd gear in automatic mode.	Wrong transmission controller for machine model number. See your authorized dealer.
Transmission Pressure Is Low (All Gears)	Low oil level.	Check transmission oil level and refill if necessary.
	Switch.	See your authorized dealer.
	Suction strainer is clogged.	Transmission pump may be noisy if transmission suction screen is clogged. Drain transmission. Remove and clean suction screen. Also, check condition of transmission filter.
	Transmission pressure regulating valve is stuck, or spring is broken.	See your authorized dealer.
	Control valve gasket.	Inspect transmission control valve for external leakage. Remove control valve. Inspect and replace gasket, if necessary.
	Pressure regulating valve.	See your authorized dealer.
	Modulation valve.	See your authorized dealer.
	Transmission pump.	See your authorized dealer.

Continued on next page

TX,100,DH2484 -19-27OCT92-2/6

Symptom	Problem	Solution
Transmission System Pressure Is Low (One Or Two Gears)	Transmission control valve gasket.	Inspect transmission control valve for external leakage. Remove control valve. Inspect and replace gasket, if necessary.
	Clutch piston or seal ring leakage.	See your authorized dealer.
Transmission Shifts Too Slow	Low oil level (aeration of oil).	Check and add oil. (See Maintenance—Every 10 Hours or Daily chapter.)
	Low transmission pressure.	See your authorized dealer.
	Transmission pump suction screen restricted.	See your authorized dealer.
	Low transmission pump flow.	See your authorized dealer.
	Excessive transmission element leakage.	See your authorized dealer.
	Modulation valve.	See your authorized dealer.
	Two-stage piston.	See your authorized dealer.
	Oil passages restricted between control valve and transmission elements.	See your authorized dealer.
Transmission Shifts Too Fast	System pressure too high.	See your authorized dealer.
	Stuck modulation valve.	See your authorized dealer.
	Stuck or missing check valves.	See your authorized dealer.
	Damaged or missing orifice seal in control valve.	See your authorized dealer.
	Broken piston return spring.	See your authorized dealer.

Continued on next page
TX,100,DH2484 -19-27OCT92-3/6

Symptom	Problem	Solution
Machine "Creeps" In Neutral	Warped disks and plates in transmission.	See your authorized dealer.
Transmission Hydraulic System Overheats	High oil level.	Check and adjust.
	Low oil level.	Check and correct. (See Fuels and Lubricants Chapter.)
	Wrong oil grade.	Check oil grade. (See Fuels and Lubricants Chapter.)
	Park brake engaged.	Release park brake.
	Lube lines pinched, restricted, or leaking.	Check cooler lines.
	Machine operated in too high gear range.	Operate machine in correct gear range.
	Temperature gauge or sender.	See your authorized dealer.
	Air flow through oil cooler or radiator restricted.	See your authorized dealer.
	Oil cooler thermal relief bypass valve stuck.	See your authorized dealer.
	Oil cooler internally restricted.	See your authorized dealer.
	Warped disks and plates in transmission.	See your authorized dealer.
	Leakage in transmission hydraulic system.	See your authorized dealer.
Excessive Transmission Noise (Under Load Or No Load)	Low transmission pump output.	See your authorized dealer.
	Engine low idle too low.	Adjust. (See Adjust Engine Speed Linkage in Maintenance—Every 1000 Hours chapter.)

Continued on next page
TX,100,DH2484 -19-27OCT92-4/6

Symptom	Problem	Solution
Foaming Oil	Parts worn or damaged in transmission.	Remove transmission suction screen. Inspect for metal particles. Repair or replace as necessary.
	Low or no lube.	See your authorized dealer.
	Incorrect type of oil.	Change oil.
	High oil level.	Drain some oil.
	Low oil level.	Add oil.
Machine Vibrates	Air leak on suction side of pump.	Check oil pickup tube on side of transmission.
	Aerated oil.	Check and add oil.
Machine Lacks Power And Acceleration	Universal joints on transmission drive shaft or differential drive shafts.	Check universal joints.
	Engine fast idle speed set too low.	Check fast idle adjustment. (See Adjust Engine Speed Linkage in Maintenance—Every 1000 Hours chapter.)
	Incorrect transmission oil.	Check oil. (See Fuels and Lubricants chapter.)
	Aerated oil.	Check and add oil.
	Low transmission pressure.	See your authorized dealer.
	Torque converter freewheel clutch.	See your authorized dealer.
	Warped transmission clutch.	See your authorized dealer.
	Brake drag.	See your authorized dealer.
	Clutch cut-off valve sticking.	See your authorized dealer.
	Low engine power.	See your authorized dealer.

Continued on next page
TX,100,DH2484 -19-27OCT92-5/6

Symptom	Problem	Solution
Torque Converter Stall RPM Too High	Aerated oil.	See your authorized dealer.
	Converter relief valve stuck open.	See your authorized dealer.
	Torque converter seal leakage.	See your authorized dealer.
	Torque converter not transferring power (bent fins, broken stator).	See your authorized dealer.
Torque Converter Stall RPM Too Low	Low engine power.	See your authorized dealer.
	Mechanical malfunction.	See your authorized dealer.
Transmission Pressure Light Comes On When Shifting From Forward To Reverse (All Other Gears OK)	Low oil level.	Add oil.
	Cold oil.	Warm oil.
	Leak in reverse pack	See your authorized dealer.
Transmission Pressure Light Comes On For Each Shift	Cold oil.	Warm oil.
	No time delay in module.	See your authorized dealer.
	Shorted sensor.	See your authorized dealer.
	Stuck modulation valve.	See your authorized dealer.
	Low transmission pressure.	See your authorized dealer.
	Leak in transmission pressure circuit.	See your authorized dealer.
	Transmission pump.	See your authorized dealer.
	Clogged filter.	Inspect filter. Replace if necessary.

TX,100,DH2484 -19-27OCT92-6/6

SERVICE BRAKES

Symptom	Problem	Solution
Poor Or No Brakes	Brake accumulator charge low.	See your authorized dealer.
	Brake pump standby pressure low.	See your authorized dealer.
	Low brake pressure.	See your authorized dealer.
	Air in system.	Bleed brakes. (See Bleeding Brakes in Maintenance chapter.)
	Worn brake pads.	Inspect brake pads.
	Brake valve leakage.	See your authorized dealer.
	Brake piston seal leakage.	Check for an overfilled differential. Remove differential check plug. Apply brakes and check for leakage from check plug.
	Internal restriction in circuit.	Remove lines and components.
Aggressive Brakes	Clutch cut-off switch out of adjustment.	Adjust switch. (See Adjusting Clutch Cut-Off Switch in Maintenance chapter.)
	Brake valve.	See your authorized dealer.
	Low oil level.	Check oil level.
Brakes Drag	Brake pedal not returning properly.	Inspect.
	Stuck brake piston.	See your authorized dealer.
	Debris holding spool down in brake valve.	See your authorized dealer.
	Warped brake disk.	Inspect brake pads. (See Inspecting Brake Pads in Maintenance chapter.)
	Brake valve.	See your authorized dealer.

Symptom	Problem	Solution
Brakes Lock Up	Air in brake system.	Bleed brakes. (See Bleeding Brakes in Maintenance chapter.)
	Brake valve.	See your authorized dealer.
Brakes Chatter	Air in brake system.	Bleed brakes. (See Bleeding Brakes in Maintenance chapter.)
	Worn brake pads.	Inspect brake pads. (See Inspecting Brake Pads in Maintenance chapter.)
	Wrong oil in differential.	Drain. Refill. (See Fuels and Lubricants chapter.)
	Loose brake pads.	See your authorized dealer.
Hissing Noise When Brake Pedal Is Depressed With Engine Stopped	Brake valve, or brake piston leakage.	See your authorized dealer.
Brake Pressure Warning Light Will Not Go Out	Brake pressure warning switch.	See your authorized dealer.
	Brake accumulator pressure too low.	See your authorized dealer.
	Low brake pump standby pressure setting.	See your authorized dealer.
	Leakage in pressure reducing manifold block.	See your authorized dealer.
	Leakage in differential lock circuit.	See your authorized dealer.
	Leakage in brake system.	See your authorized dealer.
	Worn brake pump.	See your authorized dealer.
	544G TC only—Leakage in pin disconnect valve or cylinder.	See your authorized dealer.

DIFFERENTIAL AXLE

Symptom	Problem	Solution
No Differential Lock Operation	Electrical circuit.	See your authorized dealer.
	Differential lock solenoid valves stuck.	See your authorized dealer.
	Pressure reducing valve malfunction or setting low.	See your authorized dealer.
	Excessive differential lock sealing ring leakage.	See your authorized dealer.
	Seals on differential lock solenoid valve or regulating valve.	Remove and inspect seals.
	Differential lock piston stuck in bore.	See your authorized dealer.
	Excessive wear on differential lock disks and plates.	See your authorized dealer.
Differential Lock Slips Or Chatters When Engaged	Pressure reducing valve malfunction or setting low.	See your authorized dealer.
	Excessive differential lock sealing ring leakage.	See your authorized dealer.
	Seals on differential lock solenoid valve or regulating valve.	See your authorized dealer.
	Differential lock piston stuck in bore.	See your authorized dealer.
	Excessive wear of differential lock disks and plates.	See your authorized dealer.
	Warped differential lock disks and plates.	See your authorized dealer.
	Differential lock piston stuck in bore.	See your authorized dealer.
Differential Lock Will Not Release	Foot switch.	Inspect.

Symptom	Problem	Solution
	Electrical circuit.	See your authorized dealer.
	Differential lock solenoid valve stuck.	See your authorized dealer.
	Differential lock piston stuck in bore.	See your authorized dealer.
	Warped differential lock disks and plates.	See your authorized dealer.
Differential Overfilled With Oil On Standard Axles	Leak in brake piston seals.	See your authorized dealer.
	Incorrect breather tube.	See your authorized dealer.
Differential Overfilled With Oil On Differential Lock Axles	Not operating engine at full load.	Release differential lock pedal and operate engine at full load.
	Turbo boost line.	See your authorized dealer.
	Clogged reservoir differential filter.	Remove filter and check for debris.
	Low engine power, or turbocharger.	See your authorized dealer.
Differential Low On oil.	External leakage.	See your authorized dealer.
Excessive Differential And/Or Axle Noise	Low oil level in differential.	See your authorized dealer.
	Brakes dragging.	See your authorized dealer.
	Engaged differential lock.	Release lock.
	Pinion bearing.	See your authorized dealer.
	Gear mesh pattern between ring and pinion gear incorrect.	See your authorized dealer.
	Differential pinion gears and/or cross shafts.	See your authorized dealer.
	Axle bearing.	See your authorized dealer.
	Axle planetary.	See your authorized dealer.
	Excessive axle end play.	See your authorized dealer.
Oil Seeping From Outer Axle Seal		

Continued on next page
TX,100,DH2486 -19-07OCT92-2/3

Troubleshooting

Symptom	Problem	Solution
Axle Overheats	Worn outer bearing and/or cup.	See your authorized dealer.
	Differential overfilled with oil.	See your authorized dealer.
	Low or high differential oil.	See your authorized dealer.
	Turbo boost return circuit.	Release differential lock pedal and operate engine at full load.
	Brakes drag.	See your authorized dealer.

TX,100,DH2486 -19-07OCT92-3/3

DRIVELINE

Symptom	Problem	Solution
Excessive Driveline Vibration Or Noise	Yokes not in line on drive shafts.	Inspect. Align drive shaft yokes.
	Worn rear driveline support bearing.	See your authorized dealer.
	Bent drive shaft.	See your authorized dealer.
	Loose yoke retaining nuts (drive shafts wobble at high speed).	See your authorized dealer.
	Rear axle oscillating support.	See your authorized dealer.
	Lack of lubrication.	Lubricate with proper grade of grease. (See Fuels and Lubricants chapter.)

TX,100,DH2487 -19-09SEP92-1/1

PARK BRAKE

Symptom	Problem	Solution
Brake Will Not Hold	Not adjusted correctly.	Adjust park brake. (See Adjust Park Brake in Maintenance—Every 1000 Hours chapter.)
	Park brake solenoid.	See your authorized dealer.
	Brake disk and/or brake pads worn.	See your authorized dealer.
	Brake piston.	See your authorized dealer.
Brake Disk Overheats	Brake pads out of adjustment.	Adjust park brake. (See Adjust Park Brake in Maintenance—Every 1000 Hours chapter.)
	Brake not released.	Release park brake.
Park Brake Indicator In Monitor Does Not Come On When Brake Applied	Wiring or switch.	See your authorized dealer.
Brake Will Not Apply	Pads out of adjustment.	Adjust park brake. (See Adjust Park Brake in Maintenance—Every 1000 Hours chapter.)
	Restriction between pressure reducing valve manifold and brake.	See your authorized dealer.

TX,100,DH2488 -19-02OCT92-1/1

AIR CONDITIONING

Symptom	Problem	Solution
Air Conditioning System Does Not Operate	Accessory relay #2.	See your authorized dealer.
	Fuse.	Replace fuse.
	Fan motor switch.	See your authorized dealer.
	Fan motor resistor.	See your authorized dealer.
	Fan motor.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.
	Temperature control switch.	See your authorized dealer.
	Low pressure switch.	See your authorized dealer.
	High pressure switch.	See your authorized dealer.
	Compressor clutch coil.	See your authorized dealer.
	Relay.	See your authorized dealer.
	Circuit breaker.	See your authorized dealer.
	Condenser fan motor.	See your authorized dealer.
	Wiring harness.	See your authorized dealer.

TX,100,DH2489 -19-09SEP92-1/1

Storage

PREPARE MACHINE FOR STORAGE

1. Repair worn or damaged parts. Install new parts, if necessary, to avoid needless delays later.
2. Loosen alternator and fan belts.
3. Clean primary air cleaner element.

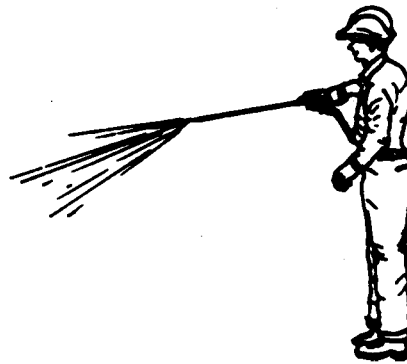


T47764 -UN-09NOV88

TX,105,FF1190 -19-03AUG92-1/3

IMPORTANT: High pressure washing [greater than 1379 kpa (13.8 bar) (200 psi)] can damage freshly painted finishes. Paint should be allowed to air dry for 30 days minimum after receipt of machine before cleaning parts or machine with high pressure. Use low pressure wash operations until 30 days have elapsed.

4. Wash the machine. [Use low pressure wash operations (less than 1379 kpa (13.8 bar) (200 psi)) until 30 days after receipt of machine.] Paint areas to prevent rust. Replace decals, where needed.
5. Remove seat cushion and other perishable items.



T5813AM -UN-09FEB89

IMPORTANT: LPS 3[®] Rust Inhibitor can destroy painted finish. DO NOT spray LPS 3 Rust Inhibitor on painted surfaces.

6. Retract all hydraulic cylinders, if possible. If not, coat exposed cylinder rods with LPS 3 Rust Inhibitor.
7. Lubricate all grease points.
8. If possible, raise machine high enough so tires do not touch the ground. If not, park on a hard surface to prevent tires from freezing to ground.
9. Store machine in a dry, protected place. If stored outside, cover with a waterproof material.

TX,105,FF1190 -19-03AUG92-2/3

IMPORTANT: Prevent possible machine damage from unauthorized persons operating machine. Attach a "DO NOT OPERATE" tag to steering wheel.

10. Place a "DO NOT OPERATE" tag on the steering wheel.
11. Remove keys and lock all covers and doors.

LPS 3 Rust Inhibitor is manufactured by Holt Lloyd Corporation.



T7447AO -19-22APR91

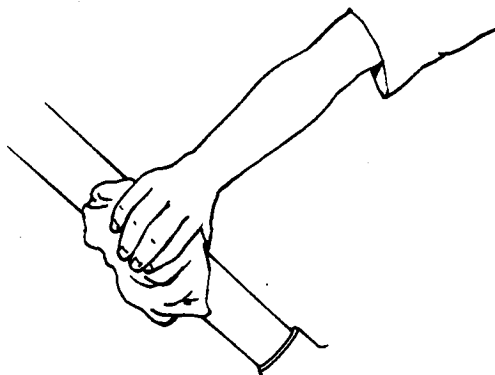
TX,105,FF1190 -19-03AUG92-3/3

MONTHLY STORAGE PROCEDURE



CAUTION: Engine exhaust fumes can cause sickness or death. Start engine **ONLY** in a well-ventilated area.

1. Drain water and sediment from fuel tank when air temperature is above freezing.
2. Remove LPS 3 Rust Inhibitor from cylinder rods with a cleaning solvent.



T6191AA -UN-18OCT88

TX,105,FF,400 -19-06SEP94-1/2

IMPORTANT: Prevent possible engine damage. During cold temperatures, check fluidity of engine oil on dipstick. If the oil appears waxy and/or jelly-like rather than liquid, DO NOT attempt to start engine. Use external heat source to warm the crankcase until oil appears fluid.



T6181AU -UN-18OCT88

3. Check all fluid levels. If low, check for leaks and add oil as required.
4. Check belts.
5. Check condition of all hoses and connections.
6. Check electrolyte level. Charge and install battery.
7. Fill fuel tank.
8. Pre-lubricate turbocharger bearings:
 - a. Remove engine shut-off fuse.
 - b. Crank engine for 10 seconds.
 - c. Install engine shut-off fuse.
 - d. Start engine. Run several minutes at 1/3 speed until engine is at normal operating temperature.
9. Bleed fuel system. If engine fails to start or runs poorly after starting, change fuel filter(s). Bleed fuel system again.
10. Operate all controls, levers, seat adjustments, etc.
11. Cycle all hydraulic functions several times. Check condition of all hoses and connections.
12. Check condition of tires. Check tire pressure.

Machine Numbers

RECORD PRODUCT IDENTIFICATION NUMBER (PIN)

Purchase Date _____

NOTE: Record all 13 characters of the Product Identification Number.



T7829BJ -UN-21SEP92

TX,110,DH2545 -19-11DEC92-1/1

RECORD ENGINE SERIAL NUMBER—544G

Engine Serial Number (A) _____

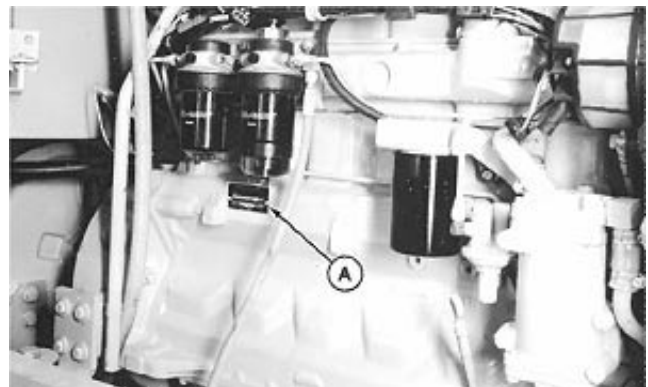


T7829BK -UN-21SEP92

TX,110,DH2272 -19-02OCT92-1/1

RECORD ENGINE SERIAL NUMBER—624G

Engine Serial Number (A) _____

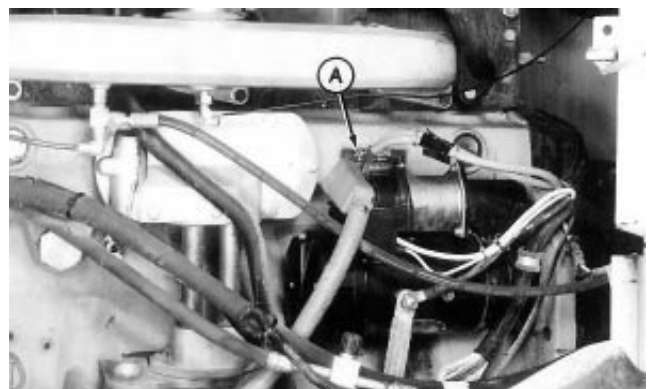


T7853AW -UN-08OCT92

TX,110,DH2273 -19-07OCT92-1/1

RECORD ENGINE SERIAL NUMBER—644G

Engine Serial Number (A) _____



T100710 -UN-22MAR96

TX,110,DH2274 -19-02OCT92-1/1

RECORD TRANSMISSION SERIAL NUMBER

Transmission Serial Number _____

Located on right side of transmission case, near lower right corner of case.

05T,120,MM9 -19-06JUN91-1/1

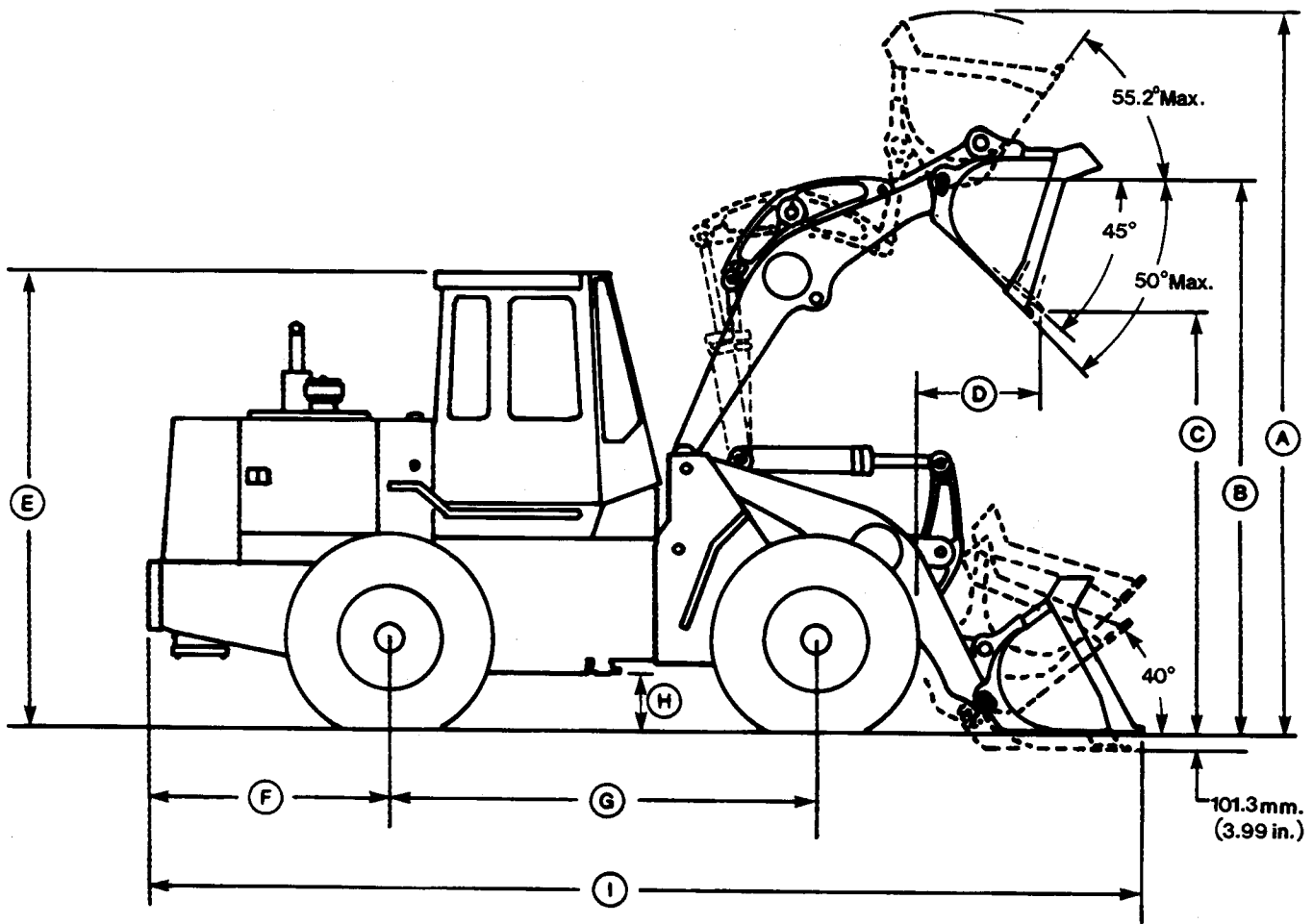
RECORD HYDRAULIC PUMP SERIAL NUMBER

Hydraulic Pump Serial Number _____

TX,110,DH2546 -19-16SEP92-1/1

Specifications

544G SPECIFICATIONS



TX,115,DH2265 -19-16JUN93-1/2

T6603AC -UN-20OCT88

Specifications

A—Overall operating height (boom full raise)	4.83 m (15 ft 10 in.)
B—Bucket hinge height	3.72 m (12 ft 3 in.)
C—Dump height	2.84 m (9 ft 4 in.)
D—Dump reach	0.94 m (3 ft 1 in.)
E—Height to top of cab and canopy	3.17 m (10 ft 5 in.)
F—Overhang	1.63 m (5 ft 4 in.)
G—Wheelbase	2.90 m (9 ft 6 in.)
H—Ground clearance	373 mm (1 ft 3 in.)
I—Overall length	6.89 m (22 ft 7 in.)
Width over tires	
17.5-25 tires	2.42 m (8 ft 0 in.)
20.5-25 tires	2.46 m (8 ft 1 in.)
Standard operating weight	10 262 kg (22,624 lb)
Counterweight weight	
(1st optional counterweight)	358 kg (790 lb)
(2nd optional counterweight)	434 kg (934 lb)

TX,115,DH2265 -19-16JUN93-2/2

544G SPECIFICATIONS

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard, 17.5—25, 12 PR, L2 tires, one rear counterweight, ROPS cab, full fuel tank, and 79 kg (175 lb) operator.

Engine:		
John Deere 6059T (S.N. 553285—)		89 kW (120 hp)
Piston displacement		5.884 L (359 cu in.)
Air cleaner		Dual stage dry type with restriction indicator
Electrical system		12-volt battery with 95-amp alternator
Cold cranking capacity at -18°C (0°F)		625 amps
Reserve capacity		160 min.
Torque Converter		Single phase, single stage
Transmission		Countershaft, power shift, automatic
Travel Speeds:		
Forward Speeds:	km/h	mph
1	0—7.4	0—4.6
2	0—12.3	0—7.7
3	0—27.2	0—16.9
4	0—38.4	0—23.8
Reverse Speeds:	km/h	mph
1	0—7.4	0—4.6
2	0—12.3	0—7.7
3	0—27.2	0—16.9

NOTE: All travel speeds are with 20.5—25 tires.

Specifications

Brakes, Service:

Power-actuated, 4-wheel, inboard-mounted, wet disk

Foot-operated, by either pedal

Left pedal also disconnects transmission (if selected by operator)

External inspection

Low brake pressure warning light and buzzer in monitor

Brakes, Park:

Spring applied, hydraulically released parking brake is attached to the output shaft

Transmission disconnects with park brake applied

Warning light in monitor—Dual-level

Amber lights with transmission in neutral

Red STOP indicator lights, and buzzer sounds with transmission in gear

Steering:

Turning radius (to centerline of outside tire)

4.95 m (16 ft 3 in.)

Rear axle oscillation

22 degrees, stop to stop

Tires

15.5—25, 12 PR L2

17.5—25, 12 PR L2

17.5—25, 12 PR L3

20.5—25, 12 PR L2

20.5—25, 12 PR L3

17.5—25, Radial, One Star L2 Equivalent

17.5—25, Radial, One Star L3 Equivalent

20.5—25, Radial, One Star L2 Equivalent

20.5—25, Radial, One Star L3 Equivalent

Maximum Lift Capacity With Standard Equipment

Maximum height

5 457 kg (12,031 lb)

Ground level

11 006 kg (24,264 lb)

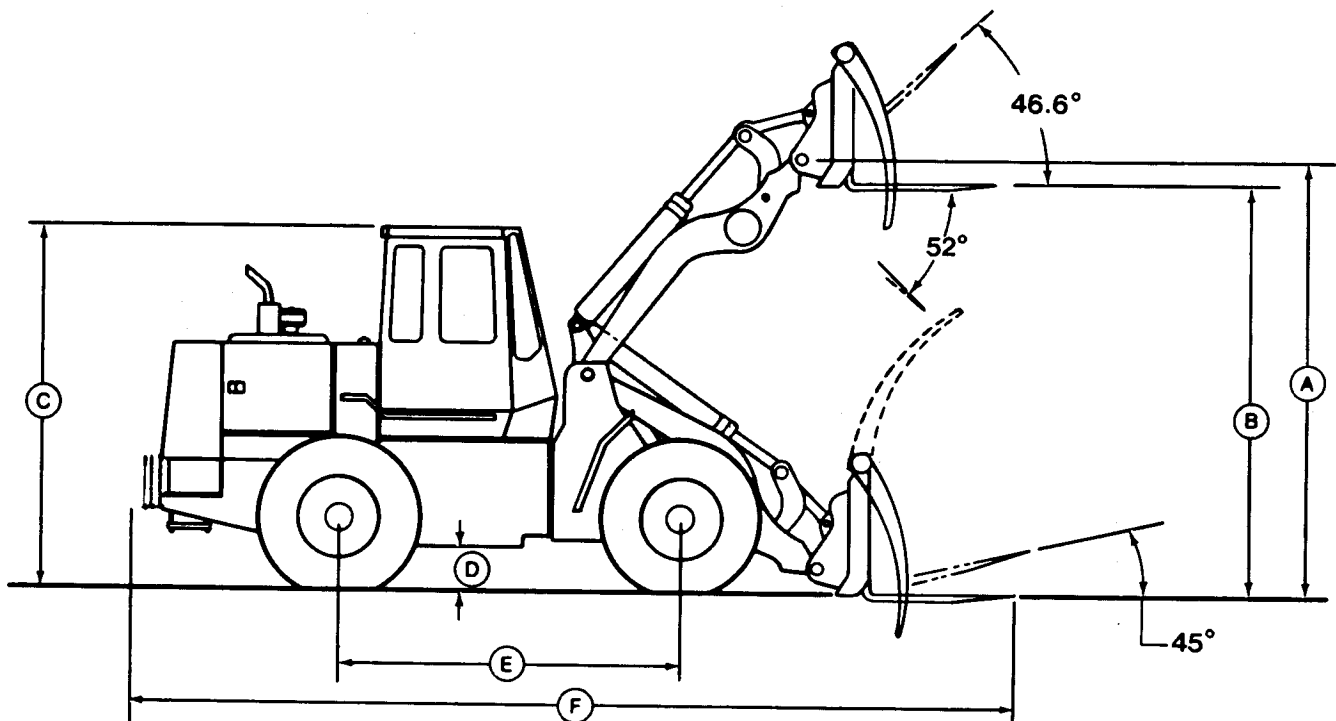
TX,115,DH2267 -19-08DEC95-2/2

DRAIN AND REFILL CAPACITIES—544G

	Metric	U.S.
Cooling system	23.5 L	25 qt
Fuel tank	218 L	58 gal
Engine crankcase and filter	19 L	20 qt
Transmission case and filter	9.5 L	10 qt
Front differential	18 L	19 qt
Rear differential	18 L	19 qt
Hydraulic reservoir	76 L	80 qt

TX,115,JC1149 -19-23MAY96-1/1

544G LL SPECIFICATIONS



T7829AX -UN-10SEP92

TX,115,DH2291 -19-16JUN93-1/2

Specifications

A—Coupler hinge height	3.72 m (12 ft 3 in.)
B—Ground to top of tine	3.53 m (11 ft 7 in.)
C—Height to top of cab and canopy	3.17 m (10 ft 5 in.)
D—Ground clearance	373 mm (1 ft 3 in.)
E—Wheelbase	2.90 m (9 ft 6 in.)
F—Overall length	
with 1219 mm (48 in.) tine	7.52 m (24 ft 8 in.)
with 1372 mm (54 in.) tine	7.67 m (25 ft 2 in.)
with 1524 mm (60 in.) tine	7.82 m (25 ft 8 in.)
Width over tires	
17.5-25 tires	2.42 m (8 ft 0 in.)
20.5-25 tires	2.46 m (8 ft 1 in.)
23.1-26 tires	2.77 m (9 ft 1 in.)
Standard operating weight	
with 1219 mm (48 in.) tine	12 019 kg (26,497 lb)
with 1372 mm (54 in.) tine	12 038 kg (26,544 lb)
with 1524 mm (60 in.) tine	12 056 kg (26,583 lb)

TX,115,DH2291 –19–16JUN93–2/2

544G LL SPECIFICATIONS

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard, 17.5—25, 12 PR, L3 tires, two rear counterweights, ROPS cab, full fuel tank, and 79 kg (175 lb) operator.

Engine:		
John Deere 6059T (S.N. 553285—)		89 kW (120 hp)
Piston displacement		5.884 L (359 cu in.)
Air cleaner		Dual stage dry type with restriction indicator
Electrical system		12-volt battery with 95-amp alternator
Cold cranking capacity at -18°C (0°F)		625 amps
Reserve capacity		160 min.
Torque Converter		Single phase, single stage
Transmission		Countershaft, power shift, automatic
Travel Speeds:		
Forward Speeds:	km/h	mph
1	0—7.4	0—4.6
2	0—12.3	0—7.7
3	0—27.2	0—16.9
4	0—38.4	0—23.8
Reverse Speeds:	km/h	mph
1	0—7.4	0—4.6
2	0—12.3	0—7.7
3	0—27.2	0—16.9

NOTE: All travel speeds are with 20.5—25 tires.

Specifications

Brakes, Service:

Power-actuated, 4-wheel, inboard-mounted, wet disk

Foot-operated, by either pedal

Left pedal also disconnects transmission (if selected by operator)

External inspection

Low brake pressure warning light and buzzer in monitor

Brakes, Park:

Spring applied, hydraulically released parking brake is attached to the output shaft

Transmission disconnects with park brake applied

Warning light in monitor—Dual-level

Amber lights with transmission in neutral

Red STOP indicator lights, and buzzer sounds with transmission in gear

Steering:

Turning radius (to centerline of outside tire)

4.95 m (16 ft 3 in.)

Rear axle oscillation

22 degrees, stop to stop

Tires:

17.5—25, 12 PR L2

17.5—25, 12 PR L3

17.5—25, Radial, One Star, L2 Equivalent

20.5—25, 12 PR L2

20.5—25, 12 PR L3

23.1—26, 10 PR LS-2

28 L—26, 14 PR LS-2

Maximum Lift Capacity

Maximum height

Fork level

4 649 kg (10,251 lb)

Fork rolled back

4 440 kg (9,789 lb)

Ground level

Fork level

8 716 kg (19,215 lb)

Fork rolled back

11 748 kg (25,900 lb)

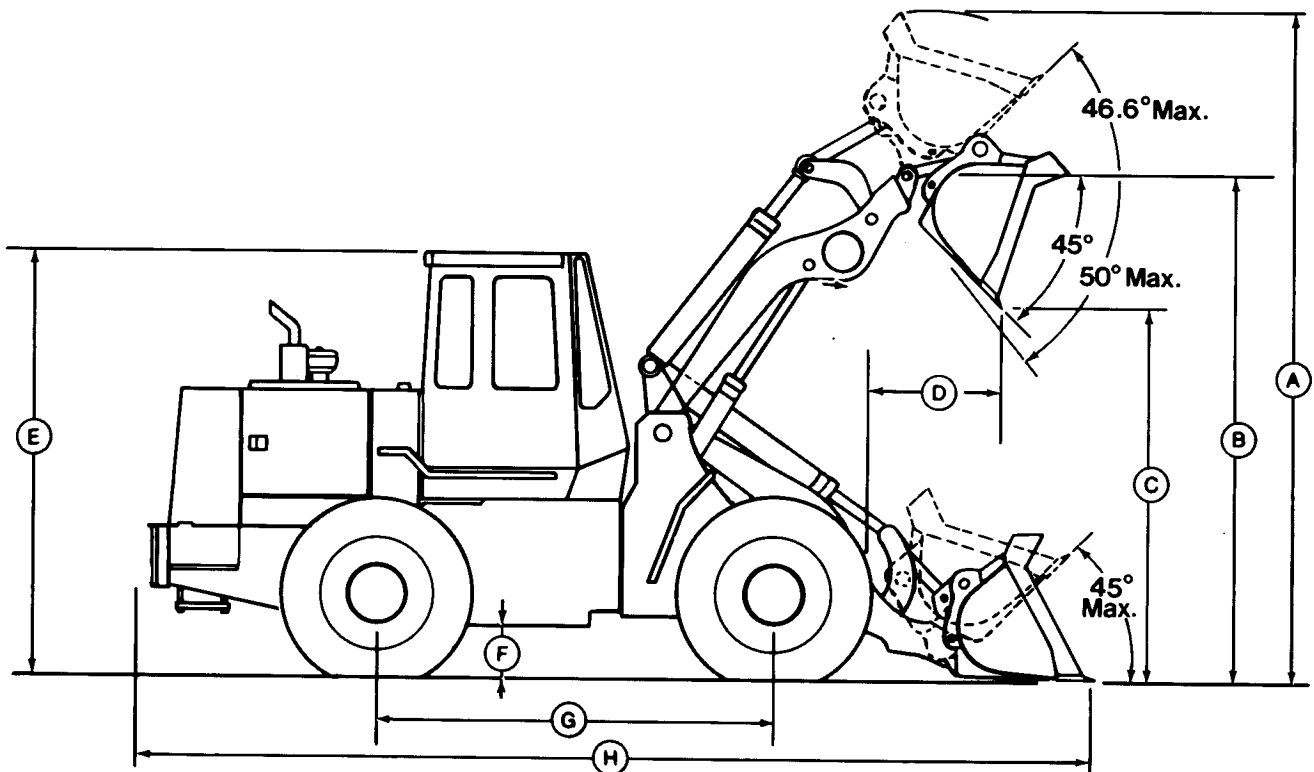
TX,115,JC1147 -19-23MAY96-2/2

DRAIN AND REFILL CAPACITIES—544G LL

	Metric	U.S.
Cooling system	23.5 L	25 qt
Fuel tank	218 L	58 gal
Engine crankcase and filter	19 L	20 qt
Transmission case and filter	9.5 L	10 qt
Front differential	18 L	19 qt
Rear differential	18 L	19 qt
Hydraulic reservoir	76 L	80 qt

TX,115,JC1148 -19-23MAY96-1/1

544G TC SPECIFICATIONS



T7829AY -UN-21SEP92

TX,115,DH2294 -19-18JUN93-1/2

Specifications

A—Overall operating height (boom full raise)	4.83 m (15 ft 10 in.)
B—Bucket hinge height	3.75 m (12 ft 4 in.)
C—Dump height	2.82 m (9 ft 3 in.)
D—Dump reach	1.06 m (3 ft 6 in.)
E—Height to top of cab and canopy	3.17 m (10 ft 5 in.)
F—Ground clearance	373 mm (1 ft 3 in.)
G—Wheelbase	2.90 m (9 ft 6 in.)
H—Overall length	7.10 m (23 ft 3 in.)
Width over tires	
15.5-25 tires	2.37 m (7 ft 9 in.)
17.5-25 tires	2.42 m (8 ft 0 in.)
20.5-25 tires	2.46 m (8 ft 1 in.)
Standard operating weight with bucket	11 168 kg (24,621 lb)

TX,115,DH2294 -19-18JUN93-2/2

544G TC SPECIFICATIONS

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard, 17.5—25, 12 PR, L2 tires, two rear counterweights, ROPS cab, full fuel tank, and 79 kg (175 lb) operator.

Engine:		
John Deere 6059T (S.N. 553285—)		89 kW (120 hp)
Piston displacement		5.884 L (359 cu in.)
Air cleaner		Dual stage dry type with restriction indicator
Electrical system		12-volt battery with 95-amp alternator
Cold cranking capacity at -18°C (0°F)		625 amps
Reserve capacity		160 min.
Torque Converter		Single phase, single stage
Transmission		Countershaft, power shift, automatic
Travel Speeds:		
Forward Speeds:	km/h	mph
1	0—7.4	0—4.6
2	0—12.3	0—7.7
3	0—27.2	0—16.9
4	0—38.4	0—23.8
Reverse Speeds:	km/h	mph
1	0—7.2	0—4.5
2	0—12.2	0—7.6
3	0—27.7	0—17.2

NOTE: All travel speeds are with 20.5—25 tires.

Specifications

Brakes, Service:

Power-actuated, 4-wheel, inboard-mounted, wet disk

Foot-operated, by either pedal

Left pedal also disconnects transmission (if selected by operator)

External inspection

Low brake pressure warning light and buzzer in monitor

Brakes, Park:

Spring applied, hydraulically released parking brake is attached to the output shaft

Transmission disconnects with park brake applied

Warning light in monitor—Dual-level

Amber lights with transmission in neutral

Red STOP indicator lights, and buzzer sounds with transmission in gear

Steering:

Turning radius (to centerline of outside tire)

4.95 m (16 ft 3 in.)

Rear axle oscillation

22 degrees, stop to stop

Tires:

15.5—25, 12 PR L2

17.5—25, 12 PR L2

17.5—25, 12 PR L3

17.5—25, Radial, One Star, L2 Equivalent

20.5—25, Radial, One Star, L2 Equivalent

20.5—25, 12 PR L2

20.5—25, 12 PR L3

20.5—25, 16 PR L3

Maximum Lift Capacity With Standard Equipment

Maximum height

5 154 kg (11,365 lb)

Ground level

9 086 kg (20,035 lb)

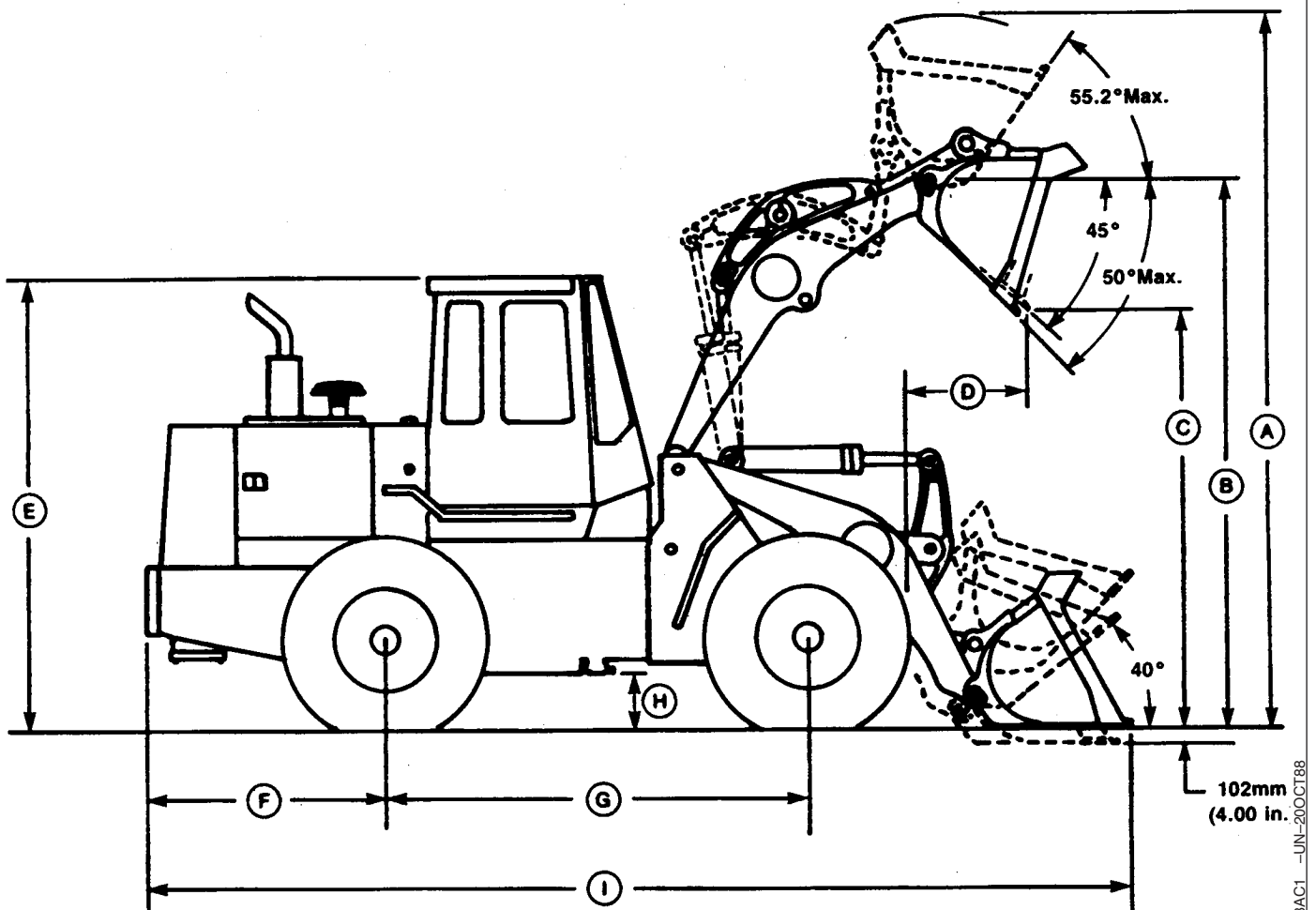
TX,115,DH2295 -19-08DEC95-2/2

DRAIN AND REFILL CAPACITIES—544G TC

	Metric	U.S.
Cooling system	23.5 L	25 qt
Fuel tank	218 L	58 gal
Engine crankcase and filter	19 L	20 qt
Transmission case and filter	9.5 L	10 qt
Front differential	18 L	19 qt
Rear differential	18 L	19 qt
Hydraulic reservoir	76 L	80 qt

TX,115,JC1153 -19-23MAY96-1/1

624G SPECIFICATIONS



TX,115,DH2268 -19-16JUN93-1/2

Specifications

A—Overall operating height (boom full raise)	5.06 m (16 ft 7 in.)
B—Bucket hinge height	3.89 m (12 ft 9 in.)
C—Dump height	2.94 m (9 ft 8 in.)
D—Dump reach	0.90 m (2 ft 11 in.)
E—Height to top of cab and canopy	3.30 m (10 ft 10 in.)
F—Overhang	1.94 m (6 ft 4.5 in.)
G—Wheelbase	3.03 m (9 ft 11 in.)
H—Ground clearance	430 mm (1 ft 5 in.)
I—Overall length	7.30 m (24 ft 0 in.)
Width over tires	
17.5-25 tires	2.55 m (8 ft 4 in.)
20.5-25 tires	2.52 m (8 ft 3 in.)
Standard operating weight	12 398 kg (27,338 lb)
Counterweight weight	
(1st optional counterweight)	429 kg (946 lb)
(2nd optional counterweight)	530 kg (1168 lb)

TX,115,DH2268 -19-16JUN93-2/2

624G SPECIFICATIONS

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard, 20.5—25, 12 PR, L2 tires, one rear counterweight, ROPS cab, full fuel tank, and 79 kg (175 lb) operator.

Engine:		
John Deere 6068T		108 kW (145 hp)
Piston displacement		6.8 L (414 cu in.)
Air cleaner		Dual stage dry type with restriction indicator
Electrical system		12-volt battery with 95-amp alternator
Cold cranking capacity at -18°C (0°F)		625 amps
Reserve capacity		160 min.
Torque Converter		Single phase, single stage
Transmission		Countershaft, power shift, automatic
Travel Speeds:		
Forward Speeds:	km/h	mph
1	0—7.3	0—4.5
2	0—11.6	0—7.2
3	0—24.5	0—15.2
4	0—37.3	0—23.0
Reverse Speeds:	km/h	mph
1	0—7.3	0—4.5
2	0—11.6	0—7.2
3	0—24.5	0—15.2

Specifications

Brakes, Service:

Power-actuated, 4-wheel, inboard-mounted, wet disk

Foot-operated, by either pedal

Left pedal also disconnects transmission (if selected by operator)

External inspection

Low brake pressure warning light and buzzer in monitor

Brakes, Park:

Spring applied, hydraulically released parking brake is attached to the output shaft

Transmission disconnects with park brake applied

Warning light in monitor—Dual-level

Amber lights with transmission in neutral

Red STOP indicator lights, and buzzer sounds with transmission in gear

Steering:

Turning radius (to centerline of outside tire

5.14 m (16 ft 11 in.)

Rear axle oscillates 26° total

Tires:

17.5—25, 12 PR L2

17.5—25, 12 PR L3

17.5—25, Radial, One Star, L2 Equivalent

20.5—25, 12 PR L2

20.5—25, 12 PR L3

20.5—25, Radial, One Star, L2 Equivalent

Maximum Lift Capacity With Standard Equipment

Maximum height

6 414 kg (14,140 lb)

Ground level

12 217 kg (26,939 lb)

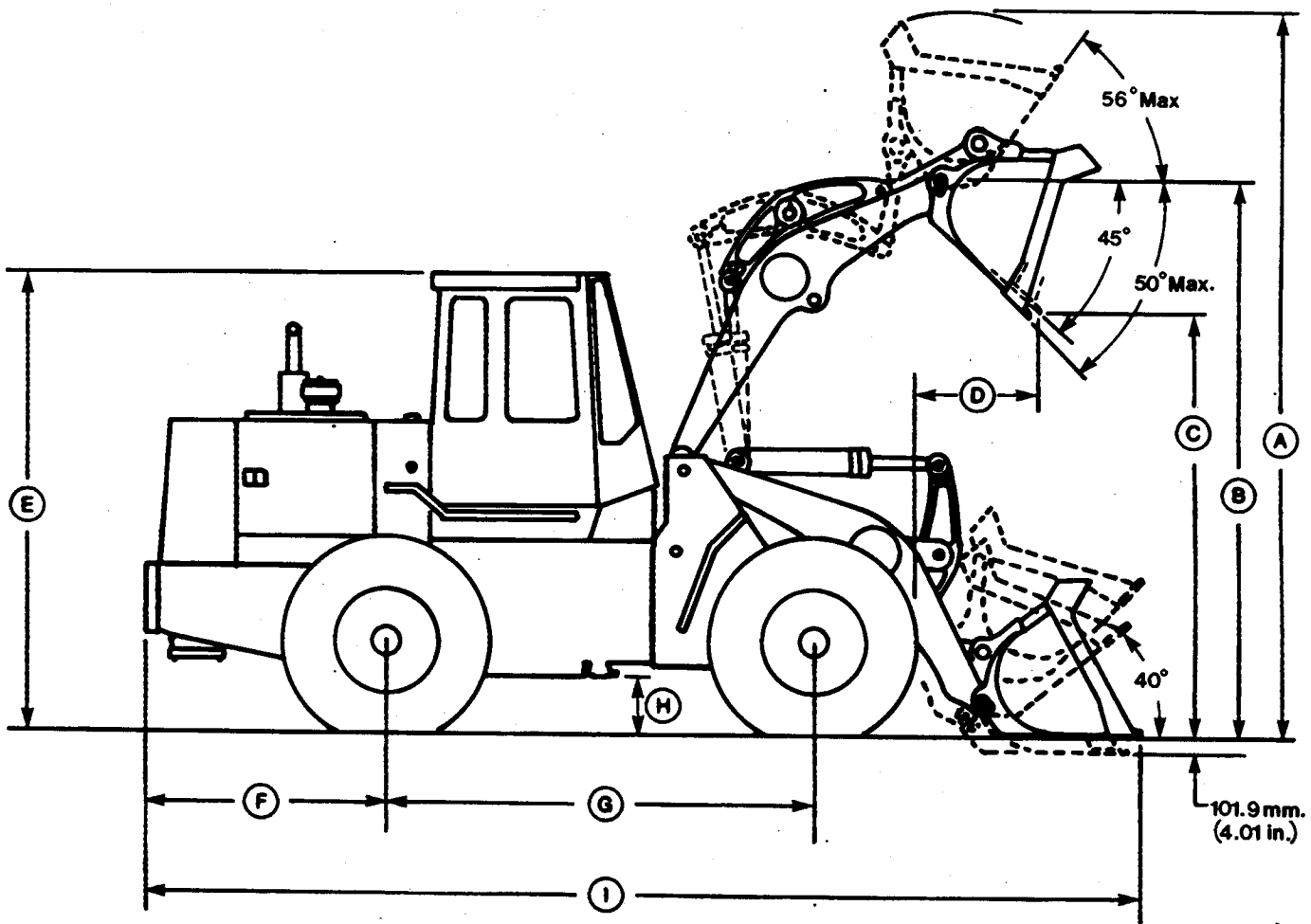
TX,115,DH2269 -19-02OCT92-2/2

DRAIN AND REFILL CAPACITIES—624G

	Metric	U.S.
Cooling system	24.6 L	26 qt
Fuel tank	249 L	66 gal
Engine crankcase and filter	19 L	20 qt
Transmission case and filter	11.4 L	12 qt
Front differential	28.4 L	30 qt
Rear differential	18 L	19 qt
Hydraulic reservoir	102 L	108 qt

TX,115,DY327 -19- 2MAY96-1/1

644G SPECIFICATIONS



T6603AD1 -UN-20OCT88

TX,115,DH2270 -19-16JUN93-1/2

Specifications

A—Overall operating height (boom full raise)	5.28 m (17 ft 4 in.)
B—Bucket hinge height	4.00 m (13 ft 2 in.)
C—Dump height	2.99 m (9 ft 10 in.)
D—Dump reach	1.01 m (3 ft 4 in.)
E—Height to top of cab and canopy	3.42 m (11 ft 3 in.)
F—Overhang	1.95 m (6 ft 5 in.)
G—Wheelbase	3.20 m (10 ft 6 in.)
H—Ground clearance	483 mm (1 ft 7 in.)
I—Overall length	7.65 m (25 ft 1 in.)
Width over tires	
20.5-25 tires	2.73 m (8 ft 11 in.)
20.5 R25 tires	2.74 m (9 ft 0 in.)
23.5-25 tires	2.77 m (9 ft 1 in.)
Standard operating weight	15 666 kg (34 544 lb)
Counterweight weight	
(1st optional counterweight)	413 kg (910 lb)
(2nd optional counterweight)	645 kg (1422 lb)

TX,115,DH2270 -19-16JUN93-2/2

644G SPECIFICATIONS

NOTE: Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard, 23.5—25, 12 PR, L2 tires, one rear counterweight, ROPS cab, full fuel tank, and 79 kg (175 lb) operator.

Engine:		
John Deere 6081		127 kW (170 hp)
Piston displacement		8.1 L (494 cu in.)
Air cleaner		Dual stage dry type with restriction indicator
Electrical system		12-volt battery with 95-amp alternator
Cold cranking capacity at -18°C (0°F)		950 amps
Reserve capacity		160 min.
Torque Converter		single phase, planetary
Transmission		Countershaft, power shift, automatic
Travel Speeds:		
Forward Speeds:	km/h	mph
1	0—7.0	0—4.4
2	0—11.2	0—7.0
3	0—22.0	0—13.7
4	0—34.6	0—21.5
Reverse Speeds:	km/h	mph
1	0—7.0	0—4.4
2	0—11.2	0—7.0
3	0—22.0	0—13.7

Specifications

Brakes, Service:

Power-actuated, 4-wheel, inboard-mounted, wet disk
 Foot-operated, by either pedal
 Left pedal also disconnects transmission (if selected by operator)
 External inspection
 Low brake pressure warning light and buzzer in monitor

Brakes, Park:

Expanding shoe on transmission output shaft, foot-operated
 Transmission disconnects with park brake applied
 Warning light in monitor—Dual-level
 Amber lights with transmission in neutral
 Red STOP indicator lights, and buzzer sounds with transmission in gear

Steering:

Turning radius (to centerline of outside tire)	5.46 m (17 ft 11 in.)
Rear axle oscillates 26° total	

Tires:

20.5—25, 12 PR L2
20.5—25, 16 PR L2
20.5—25, 16 PR L3
20.5—25, Radial, One Star, L2 equivalent
20.5—25, Radial, One Star, L3 equivalent
23.5—25, 12 PR L2
23.5—25, 20 PR L3
23.5—25, Radial, One Star, L3 equivalent

TX,115,DH2271 –19–16JUN93–2/2

DRAIN AND REFILL CAPACITIES—644G

	Metric	U.S.
Cooling system	28 L	29.5 qt
Fuel tank	284 L	75 gal
Engine crankcase and filter	24 L	25 qt
Transmission case and filter	14.2 L	15 qt
Front differential	28.4 L	30 qt
Rear differential	28.4 L	30 qt
Hydraulic reservoir	115 L	120 qt

TX,115,DY328 –19– 2MAY96–1/1

Crime Prevention Tips

HELP PREVENT CRIME

You can help take a bite out of crime by properly documenting ownership and discouraging theft.

**TAKE A BITE OUT OF
CRIME**
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TS140 -19-07OCT88

DX,CRPRV,A -19-03MAR93-1/1

RECORD IDENTIFICATION NUMBERS

1. Mark your machines with your own unique numbering system.
2. Record the Product Identification Number (PIN) of the unit and also individual component identification numbers for engines, axles, pumps, etc. Include the PIN numbers on all documentation, such as insurance, financial, and warranty papers.

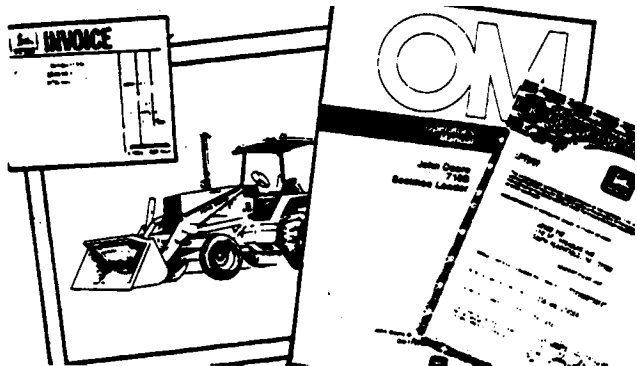


TS156 -UN-23MAR89

DX,CRPRV,H -19-04JUN90-1/1

KEEP PROOF OF OWNERSHIP

1. Take color photographs from several angles of each machine.
2. Maintain an up-to-date inventory of all your machines.
3. Keep your documented identification numbers, color photographs, and inventory in a safe, secure location.



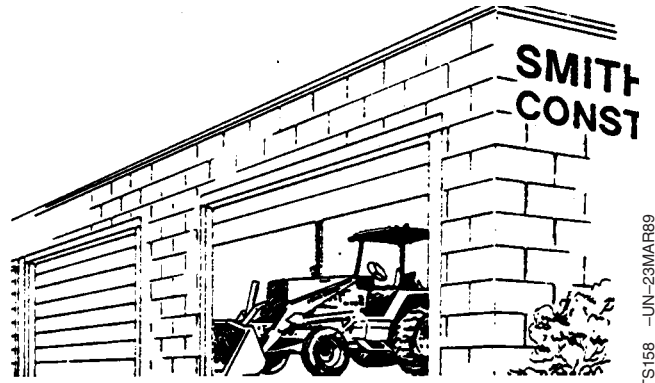
TS157 -UN-23MAR89

DX,CRPRV,I -19-04JUN90-1/1

PARK INDOORS OUT OF SIGHT

Make machines hard to move:

- Park large equipment in front of exits.
- Lower equipment to the ground. Remove key.
- Remove battery when unit is in storage.
- Lock cab doors, windows, and vandal-proof devices.
- Lock building.



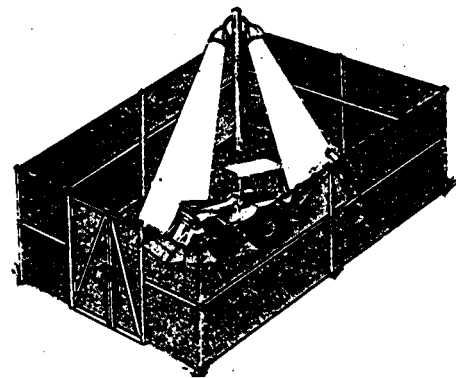
TS158 -UN-23MAR89

DX,CRPRV,J -19-04JUN90-1/1

WHEN PARKING OUTDOORS

Make machines hard to move:

- Park in a well-lighted, fenced area.
- Lower all equipment to the ground.
- Remove ignition key.
- Remove battery when unit is storage.
- Lock cab doors, windows, and vandal-proof devices.

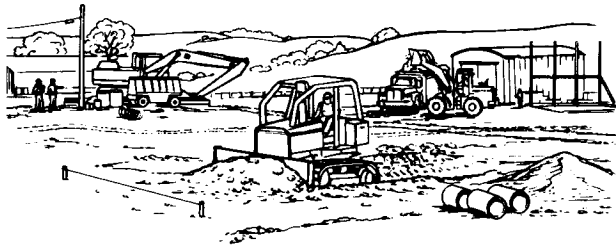


TS144 -UN-23AUG88

DX,CRPRV,K -19-04JUN90-1/1

REDUCE VANDALISM

1. Install vandal-proof devices.
2. Participate in a neighborhood watch program. Take written notes of suspicious vehicles or persons and report your findings to law enforcement agency.
3. Regularly verify that identification plates have not been removed. If they have, notify law enforcement agency. Order duplicate plates from your dealer.



T7223BB -JUN-22FEB90

TX,120,DH1093 -19-16SEP92-1/1

REPORT THEFTS IMMEDIATELY

1. Immediately notify your local law enforcement agency and insurance agent.
2. Provide a complete description of the machine, all of the documented identification numbers and color photographs.
3. Request verification of the identification numbers after they have been entered with any regional or national crime information center. Double check the numbers to be sure they are correct.
4. Notify your John Deere dealer of the theft and request that its loss be posted with full description and identification numbers.



TS146 -JUN-09JAN89

DX,CRPRV,G -19-03MAR93-1/1

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Checklists

MAINTENANCE AND REPAIR RECORD KEEPING SYSTEM

SERVICE INTERVALS

Service your machine at intervals shown on this chart. Also, perform service on items at multiples of the original requirement. For example, at 500 hours also service those items (if applicable) listed under 250 hours, 100 hours, 50 hours and 10 hours or daily.

As Required

• Inspect tires and check pressure	• Inspect belts and check tension
• Check wheel retainer cap screws	• Drain water and clean fuel tank strainer
• Clean or replace air cleaner elements	• Drain and clean primary fuel filter
• Check and clean air inlet cover	• Check and clean cab recirculating air filter

Every 10 Hours or Daily

• Lubricate pivots	• Check recovery tank coolant level
• Clean air cleaner dust unloader valve	• Check hydraulic system oil level
• Check engine oil level	• Check transmission oil level

Every 100 Hours

• Lubricate loader boom and cylinder pivots	• Check cab recirculating air filter
• Lubricate front steering cylinder pivots	• Lubricate oscillating rear axle
• Check cab fresh air filter	• Lubricate rear steering cylinder pivots

REQUIRED PARTS

Insure machine performance and availability; use only genuine John Deere parts. Verify part numbers are current and that any associated parts are also on hand i.e. filters, O-rings.

		Part Number	250 HOURS	500 HOURS	1000 HOURS	3000 HOURS
Engine Oil Filter	*544G, 624G	T19044	1	1	1	1
	644G	RE57394	1	1	1	1
Primary Fuel Filter	All	RE63136		1	1	1
Final Fuel Filter	*544G, 624G	RE62419		1	1	1
	644G	RE62419		1	1	1
Hydraulic System Return Filter	*544G	AT144879		1	1	1
	624G, 644G	AT140315		1	1	1
Hydraulic Reservoir Breather Filter	All	AM39653		1	1	1
Transmission Filter	All	AT168989			1	1
Air Filter Primary	*544G, 624G	AR79679			1	1
	644G	AR80652			1	1
Air Filter Secondary	*544G, 624G	AR79680			1	1
	644G	AR80653			1	1
Differential Lock Return Filter(s)	All	T19044				1 or 2
TORQ-GARD SUPREME PLUS 50 [®] Oil	*544G, 624G		19 L (20 qt)	19 L (20 qt)	19 L (20 qt)	19 L 20 qt)
	644G		24 L (25 qt)	24 L (25 qt)	24 L (25 qt)	24 L 25 qt)
HY-GARD [®] Transmission and Hydraulic Oil	*544G				9.5 L (10 qt)	117 L (31 gal)
	624G				11 L (12 qt)	151 L (40 gal)
	644G				14 L (15 qt)	174 L (46 gal)
Coolant Conditioner		TY16004		1	1	1
OILSCAN Kit		IPSKIT1	1	1	2	5
COOLSCAN Kit		DSO251				

*includes 544G LL and 544G TC

TX,50,JC1137 -19-22MAY96-1/1

Checklists

MAINTENANCE AND REPAIR RECORD KEEPING SYSTEM

Model:	<input type="checkbox"/> 544G	<input type="checkbox"/> 544G LL	<input type="checkbox"/> 544G TC	<input type="checkbox"/> 624G	<input type="checkbox"/> 644G	Customer: _____
PIN/Serial Number: _____			Delivery Date: _____		Hour Meter Reading: _____	

Oil Sampling

Oil samples should be taken from each system prior to its recommended drain/change interval indicated on this form. Maintenance recommendations supplied by OILSCAN will be provided based upon the oil analysis and operating information you supply. Regular oil sampling will extend the operational life of your machine's systems.

Every 250 Hours

<input type="checkbox"/> Check receiver dryer moisture indicator	<input type="checkbox"/> Replace engine oil filter
<input type="checkbox"/> Drain and refill engine oil	<input type="checkbox"/> Check radiator coolant level
Comments: _____	

Date: _____	Hour Meter Reading: _____	Maintenance Performed By: _____
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Every 500 Hours

<input type="checkbox"/> Lubricate front drive line	<input type="checkbox"/> Replace final fuel filter
<input type="checkbox"/> Check air intake hoses	<input type="checkbox"/> Replace hydraulic system return filter
<input type="checkbox"/> Check battery water level	<input type="checkbox"/> Replace hydraulic reservoir breather filter
<input type="checkbox"/> Add rust inhibitor to radiator	<input type="checkbox"/> Check front and rear differential oil level
<input type="checkbox"/> Replace primary fuel filter	
Comments: _____	

Date: _____	Hour Meter Reading: _____	Maintenance Performed By: _____
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Every 1000 Hours

<input type="checkbox"/> Lubricate rear drive line	<input type="checkbox"/> Change transmission oil
<input type="checkbox"/> Check and adjust engine speed linkage	<input type="checkbox"/> Replace transmission filter
<input type="checkbox"/> Replace air cleaner dust unloader valve	<input type="checkbox"/> Inspect and adjust park brake
<input type="checkbox"/> Replace air cleaner elements	<input type="checkbox"/> Lubricate frame hinge pivots
<input type="checkbox"/> Remove and clean engine crankcase vent tube	
Comments: _____	

Date: _____	Hour Meter Reading: _____	Maintenance Performed By: _____
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Every 2000 Hours

<input type="checkbox"/> Adjust engine valve lash	<input type="checkbox"/> Lubricate front driveline support bearing
Comments: _____	

Date: _____	Hour Meter Reading: _____	Maintenance Performed By: _____
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Every 3000 Hours

<input type="checkbox"/> Change hydraulic system oil	<input type="checkbox"/> Replace differential lock return filters
<input type="checkbox"/> Clean hydraulic system suction strainer	<input type="checkbox"/> Change front and rear differential oil
Comments: _____	

Date: _____	Hour Meter Reading: _____	Maintenance Performed By: _____
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John Deere Service Literature Available

PARTS CATALOG

The parts catalog lists service parts available for your machine with exploded view illustrations to help you identify the correct parts. It is also useful in assembling and disassembling.



DX,PARTS -19-03MAR93

TS189 -UN-17JAN89

OPERATOR'S MANUAL

The operator's manual provides safety, operating, maintenance, and service information about John Deere machines.

An extra copy of the operator's manual is available. The operator's manual and safety signs on your machine may also be available in other languages. (See your John Deere dealer to order.)



DX,INDOM -19-17SEP92

TS191 -UN-02DEC88

TECHNICAL AND SERVICE MANUALS

Technical and service manuals are service guides for your machine. Included in the manual are specifications, diagnosis, and adjustments. Also illustrations of assembly and disassembly procedures, hydraulic oil flows, and wiring diagrams.

Component technical manuals are required for some products. These supplemental manuals cover specific components.



DX,TM -19-03MAR93

TS224 -UN-17JAN89

FUNDAMENTALS OF SERVICE MANUALS

These basic manuals cover most makes and types of machines. FOS manuals tell you how to SERVICE machine systems. Each manual starts with basic theory and is fully illustrated with colorful diagrams and photographs. Both the "whys" and "hows" of adjustments and repairs are covered in this reference library.



DX,FOS -19-04JUN90

TS193 -UN-02DEC88

John Deere Service Literature Available

John Deere Distribution Service Center
Service Publications Department
P.O. Box 186, Moline, IL. 61266-0186

Name _____

Address _____

To order, fill out this form and mail it to the address above. Check for prices with your John Deere dealer or call **1-800-522-7448**. You may also place credit card orders by calling this number. Make checks payable to Deere & Co. Service Publications. Allow three weeks for delivery. No COD orders. Do not send cash or stamps. If you want manuals or catalogs for equipment not shown on this list, provide the model number, serial number, and name of the product.

Title	Order Number	Price Each	x Quantity	= Total
544G, LL, TC, 624G, 644G Loader				
Parts Catalog—544G, LL, TC, 624G	PC-2364		x	=
Parts Catalog—644G	PC-2365		x	=
Operator's Manual	OMT159816		x	=
Technical Manual-Operation and Test	TM-1529		x	=
Technical Manual-Repair	TM-1530		x	=
Component Manual-Engine (6059 and 6068)	CTM8		x	=
Component Manual-Engine (6076)	CTM42		x	=
Component Manual-Engine Accessories	CTM11		x	=
Component Manual-TeamMate™ II Axles (1200 and 1400 series)	CTM43		x	=
Loader Safety Manual	DB1228		x	=
Tire Manual	DB1009		x	=
			x	=
			x	=
			x	=
			x	=
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			x	=
			x	=
			x	=
FOS Manual—Hydraulics	FOS1005B		x	=
FOS Manual—Electronic and Electrical Systems	FOS2007B		x	=
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FOS Manual—Power Trains	FOS4006B		x	=
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FOS Manual—Welding	FOS5207B		x	=
FOS Manual—Belts and Chains	FOS5305B		x	=
FOS Manual—Bearings and Seals	FOS5405B		x	=
FOS Manual—Tires and Tracks	FOS5507B		x	=
FOS Manual—Air Conditioning	FOS5708B		x	=
FOS Manual—Fuels, Lubricants & Coolants	FOS5807B		x	=
FOS Manual—Fasteners	FOS6004B		x	=
FOS Manual—Iden. of Parts Failures	FOS6104B		x	=
1-in. 3-Ring Binder (400 pages max.)	SX2062		x	=
1-1/2-in. 3-Ring Binder (600 pages max.)	SX2063		x	=
1—1-1/2-in. 3-Post Binder (600 pages max.)	SX2066		x	=
2—3-1/2-in. 3-Post Binder (1400 pages max.)	SX2064		x	=
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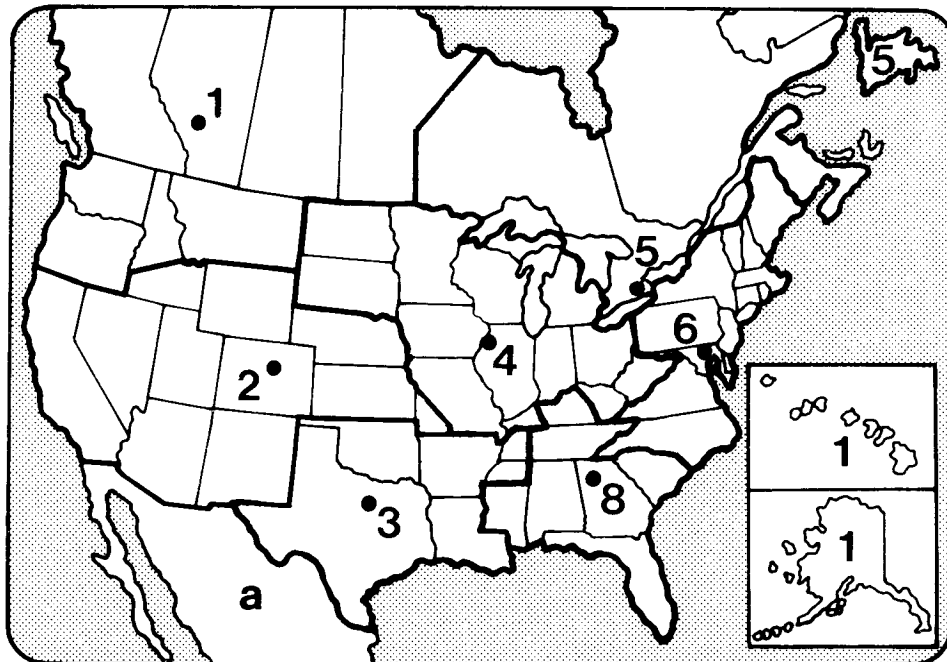
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TX,LIT1

-19-08JUN96

John Deere Service Keeps You On The Job

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Kennesaw, GA 30144
404-423-2400; fax: 404-423-2411

a—John Deere Intercontinental Limited

Overseas Industrial Division
P.O. Box 2000
Moline, IL 61265 U.S.A.
309-765-3316; fax: 309-765-3279

CUSTOMER SATISFACTION is important to John Deere. We take pride in providing superior service. We'll be around when you need us:

- We maintain a large and varied parts inventory to help minimize downtime.
- Precision tools and testing equipment enable technicians to locate and correct troubles.
- We hold regular training schools for service technicians so they know your equipment and how to maintain it.
- Our goal is to provide prompt, efficient service through competent dealerships.

COMPLAINT-RESOLUTION PROCEDURE

Your dealer is the best and fastest source to solving any problems you may experience with your product.

1. Be prepared with the following information:
 - Machine model and product identification number
 - Date of purchase
 - Nature of problem
2. Discuss problem with dealer service manager.
3. If unable to resolve, see the dealership manager. Explain the problem and request assistance.
4. If you have a persistent problem your dealership is unable to satisfy, ask your dealer to contact the John Deere area manager product support for resolution.
5. If a problem is not resolved to your satisfaction, contact the appropriate John Deere marketing division office for your area and ask to speak with the division product support manager. (See map.)

